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SCRIPTION WRITING

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A MANUAL OF PRESCRIPTION WRITING

WITH A FULL EXPLANATION OF THE METHODS OF CORRECTLY
WRITING PRESCRIPTIONS, A TABLE OF DOSES EXPRESSED
IN BOTH THE APOTHECARIES' AND METRIC SYSTEM ;
RULES FOR AVOIDING INCOMPATIBILITIES AND
FOR COMBINING MEDICINES.

BY

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*SIXTH EDITION, REVISED, ENLARGED, AND CORRECTED
ACCORDING TO THE U. S. PHARMACOPŒIA OF 1906.*

G. P. PUTNAM'S SONS
NEW YORK AND LONDON
The Knickerbocker Press

1907

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The Knickerbocker Press, New York

L139
M28
1907
cop. 1

PREFACE TO THE SIXTH EDITION.

THE demand for this book shows that it is really needed. In this edition an effort has been made to make it conform fully and accurately to the last edition of the U. S. Pharmacopœia. The chapter on Incompatibility has been entirely rewritten, with the hope that in this form it may be more useful and practical. Great attention has been given to the revision of the chapter on Doses. It is hoped that this edition will prove as useful and popular as have the previous editions.

EDWARD C. MANN,

BUFFALO, June, 1906.



PREFACE.

THAT more careful teaching in the matter of prescription writing is necessary, the records of every drug store will most conclusively show. Some of our medical schools entirely neglect this part of medical education, so that the student is left either to pick up for himself, or to get from his preceptor—he himself having been imperfectly instructed—a knowledge of one of the most important of the minor departments of medicine. Perhaps one reason for this neglect is to be found in the absence of a proper text-book. Various attempts have been made to supply this want, both in this country and abroad. The now classical work of Pereira has, until a recent date, occupied the field alone. But its imperfections are so great, and the

amount of useless material contained in it so large, that others have been stimulated to supply something simpler and more suitable for the student. Griffiths has done this for English students, but the differences between the Pharmacopœias of the two countries, the different methods adopted in prescription writing, as well as the different weights and measures employed, make his book next to useless for American students.

The work of Gerrish is most complete and useful as far as it goes, but is too limited in its scope.

In these pages an effort has been made to supply what, in the experience of the writer, has been found to be most required. In the preparation of such a work there is, of course, little chance for originality of thought: a careful collection and arrangement of what has been said before being about all that could be done. I have drawn, therefore, freely from the works of others, especially from the three mentioned, and hope that the selection will prove advantageous to the student and convenient to the teacher.

If the elaboration of details seem at times unnecessary, I must beg the critic to remember that it is done for the benefit of those who are at the very threshold, and to whom the whole subject is one of perplexity and mystery.

The introduction of a chapter on the Metric System supplies a deficiency very much felt, and is certainly demanded by the times. The method of writing this system here given is that employed on the continent of Europe and elsewhere. Whether the exclusive use of the Gravimetric method is the best and most desirable is perhaps open to question; still it is the method generally employed, and is therefore the one here taught.

The arrangement of the drugs in the posological tables will commend itself to most, while the giving of the dose in metric terms will certainly greatly enhance its value. Perhaps the greatest difficulty met with was the determination of the proper doses. To this great care has been given; but at best the result must be very unsatisfactory, for reasons given elsewhere.

To the friends who have aided me by counsel and advice in the preparation of the manuscript, and in passing the pages through the press, I take the occasion of tendering my sincerest thanks.

NEW YORK CITY,
October 21st, 1878

CONTENTS.

CHAPTER I.

	PAGE
Definitions—The Parts of a Prescription—The Heading—The Names and Quantities of In- gredients—The Directions to Compounder and to Patient—Date and Signature . . .	1

CHAPTER II.

Weights and Measures—Troy Weights—Apothe- caries' or Wine Measure—Numeral Adjec- tives—Domestic Measures—Table of Drops	12
---	----

CHAPTER III.

Official Preparations—Non-Official Preparations	22
---	----

CHAPTER IV.

The Grammatical Construction of a Prescription —Rules of Grammar—Rules for Formation of Genitive Case—Undefinable Words—Rules for Formation of Accusative Case . . .	44
---	----

CHAPTER V.

	PAGE
The Principal Words and Phrases used in Prescriptions, with their Pronunciation and Abbreviations—Abbreviations to be Avoided—Pronunciation	52

CHAPTER VI.

The Forms for Extemporaneous Prescriptions, with Examples—Pills, Mixtures, Elixirs, Emulsions, Draughts, Drinks, Powders, Confections, Troches, Gargles, Inhalations, Injections, Uses of Enemata, Suppositories, Lotions, Washes and Fomentations, Baths, Papers, Poultices, Plasters, Ointments and Cerates, Paints, Liniments—General Remarks	62
--	----

CHAPTER VII.

Doses of Medicines—Doses Proper for Different Ages—Gabius' Method—Young's, Cowling's, and Clark's Methods—Table of Doses of all the Official Drugs	99
--	----

CHAPTER VIII.

The Metric System—Gravimetric System, Volumetric System, Explanation of, and Illustrations—Conversion of Apothecaries' Weights and Measures into Grams; Rules, and Tables—Table of Value of Grams in Grains	167
---	-----

CHAPTER IX.

Medicinal Combinations	201
----------------------------------	-----

CHAPTER X.

Incompatibility	210
Dictionary of Incompatibles	219



PRESCRIPTION WRITING.

PART I.

CHAPTER I.

DEFINITIONS—THE PARTS OF A PRESCRIPTION.

A PRESCRIPTION, (from *præ*, "before," and *scriptum*, "written,") in medicine, may be defined to be the formula which a physician writes for dispensing or compounding a certain medicine or medicines, together with the directions to the patient for taking it.

This definition, although it includes more than is generally given, comprises no more than should be contained in every complete prescription.

Prescriptions may be either simple or compound: *simple*, when they contain only one

ingredient—as, for instance, a dose of Epsom salts; *compound*, when they contain two or more ingredients, as when senna is added to the salts.

The term *formula* is applied to the direction for compounding a medicine. Formulæ are official, and extemporaneous or magistral.

Official formulæ are those which are published in the different Pharmacopœias. (See Chap. III., p. 22.) Medicines prepared according to these formulæ are supposed to be kept ready-made in the drug stores, so that in prescribing them it is only necessary to indicate the official name, the amount to be dispensed, and the directions to the patient for taking, thus making a complete prescription.

Extemporaneous or Magistral formulæ are so called because they are composed by the practitioner for the occasion.

A compound prescription consists of:—

1. The heading.
2. The names and quantities of ingredients.
3. The directions to the compounder.
4. The directions to the patient.
5. Date and signature.

I will now take up each one of these components and consider it alone.

1. *The Heading*.—The symbol \mathcal{R} is usually placed at the head of every prescription. It stands for the Latin word *Recipe* (pronounced Ré-ci-pe) which is the imperative mood of the Latin verb *recipio*, and means "take." Formerly prescriptions were headed by pious invocations to Jupiter or some other heathen deity, but these prayers were gradually shortened to the simple Zodiacal sign γ . Other headings have been used at different times, but all have been discarded, and we have finally come back to the sign of the old Olympian god, with the addition, however, of an upright stroke, which converts it into a convenient abbreviation, but with the remnant of the old superstition or heathenism still clinging to it.

In French the letter "P," or "Ps" (for *prenez*, take), is usually substituted.

2. *Names and Quantities of Ingredients*.—This part of a prescription is always written in Latin, and in a typical prescription is supposed to contain the following:

THE BASIS, or principal active agent.

THE AUXILIARY or adjuvant, to aid or promote the action of the basis.

THE CORRECTIVE, to correct or modify its action.

THE VEHICLE, to give a proper form or taste to the whole.

"These four parts of a formula," says Pereira, "are intended to accomplish the object of Asclepiades, *curare cito, tute et jucunde*, in other words, to enable the basis to *cure quickly, safely and pleasantly*."

The order in which the ingredients are to be taken is that already given: first the basis, then the auxiliary, afterwards the corrective, and lastly the vehicle. In writing, each one is to have a separate line.

It is by no means necessary that each prescription shall contain so many ingredients. The basis may need no aid in doing its work, may require no corrective of its action nor any special vehicle. On the other hand, we are not limited to four ingredients; as many substances may be combined as in the opinion of

the prescriber may be for the benefit of his patient. In olden times prescriptions contained immense numbers of the most incongruous and curious ingredients. *Shot-gun prescriptions* they have been called, because of their propensity to scatter, and of the certainty of their hitting somewhere. The tendency now is toward simplicity; but there is danger in carrying this too far, for there are many valuable effects which may be obtained by proper combinations. (See Chap. IX.)

The names of the different medicines used are determined by the Pharmacopœia, and are there expressed in Latin. The advantages of always using the Pharmacopœial or *official names*, as they are called, is manifest. By so doing all misapprehension or doubt as to what is meant is done away with.

It is not safe even to use chemical names; for chemical nomenclature is liable to change, so that mistakes might very easily happen were this method adopted. For example: corrosive sublimate was formerly considered to be a chloride of mercury, while now it is called a

bichloride; and calomel is the chloride or, more properly, subchloride. The Pharmacopœia does away with any danger of mistake by calling one the corrosive and the other the mild chloride. The tendency in the U. S. Ph. is towards shortening the name as much as possible. Wherever one name will suffice to distinguish the drug it alone is used. *Veratrum Viride* is official under the name of "veratrum"; simple cerate has been reduced to "ceratum"; fox glove is called "digitalis" instead of "digitalis purpurea," as in the British Ph., and so on.

The quantities of each ingredient should be indicated, solids by the weights of the Apothecaries' or Troy system, and fluids by wine measure; or both may be indicated by weight, according to the French or Metric system.*

The calculation of the amount of each ingredient wanted, although a very simple matter, I have sometimes found to be a stumbling-block to beginners. The following *rule* will make it

*The U. S. Pharmacopœia now employs the Metric System exclusively. In all of its formulæ solids are weighed but liquids are measured.

quite plain: Having written down the names of the ingredients, each in a separate line, decide how many doses your mixture is to contain, or how many pills, suppositories, etc., you desire to have made. The total number of doses, multiplied by the quantity proper for the dose of each ingredient, will give the total amount of that ingredient required. This is to be set down opposite to its name.

3. *The Directions to the Dispenser* are also written in Latin. They declare the manner in which the ingredients shall be prepared before dispensing them to the patient. It is not necessary to give very exact or explicit directions as to the best methods of compounding a prescription. For, although a certain familiarity with the rules of pharmacy is necessary for a physician in order that he may write elegant prescriptions, yet the choice of the method of compounding may be safely left to the apothecary, as a knowledge of such methods is a part of his business.

Sometimes we may require to have drugs prepared in a certain way, when there is a choice

of methods, and when the adoption of a certain one would make a difference in the result. In such cases, which occur rarely, the directions must be written out in full and with great care.

4. *The Directions to the Patient.*—This part of the prescription is called the *Signature*, and is commonly preceded by the letter S, or the abbreviation Sig., standing for the Latin word *Signa*—"sign."

In this country the directions to the patient are usually written in English, while in Europe, and in England particularly, Latin is still employed. The use of English for this part is, however, much to be preferred, as by its use all danger of mistakes from mistranslation are avoided, and the patient is able to see for himself that the directions are correctly copied upon the label. The directions should *always be written out in full*. The dose, hours for taking, method of taking, and whatever else is necessary for the patient to know concerning it, should be written out carefully and plainly, so that no mistake can occur. Particularly to be avoided is the

practice of giving the patient verbal directions and then writing on the prescription "As directed."

If this latter procedure is followed the druggist, not knowing how large a quantity of the mixture is to be taken at once, cannot judge of the correctness of the doses; and if the drug is of a powerful nature, may not desire to dispense it without knowing its destination and proposed use. Again, if the directions are given to the patient or to his attendants, they may be forgotten wholly or in part, or confusion may arise between different bottles, perhaps endangering the welfare or even the life of the patient.

All preparations for topical application or injection should be ordered to be so marked; and if one of the ingredients is a powerful poison, the word "Poison" should be ordered to be placed on the bottle, provided, of course, that there is no special objection to the patient's knowing that he is taking a poison.

Every prescription should be signed by the writer with his name in full, and, if in a large

city with his address and perhaps office hours. The reasons for this are that the apothecary, if in need of further information, either on account of illegibility or an actual or supposed mistake or doubt as to certain points, may be enabled to communicate with the physician without the necessity of going to the patient, and without his knowledge. The practice of putting the name of the patient on the prescription is also to be recommended, especially where there are two or more patients in the same family. The date should always be added, both because it may be convenient for reference, and because it may become of very great importance in a medico-legal point of view.

It is well, when very large or unusual doses of a powerful remedy are ordered, to add at the bottom of the prescription something to this effect: "This dose correct," or "Large dose intentional"; otherwise a careful dispenser may refuse to make up the prescription without previously consulting the prescriber, and thus causing the loss of perhaps valuable time.

In case it is not desirable that the prescription shall be repeated without the special recommendation of the physician, an order to that effect may be put on its face. Such an order will be followed by every responsible druggist.

CHAPTER II.

WEIGHTS AND MEASURES.

THE weights and measures most used in the United States, both by physicians in prescribing and by pharmacists in dispensing medicines, are the Troy System of Weights, and the Wine Measure.

The *weights* are derived from the *Troy pound*, and are—

The Pound, Symbol	℔	Latin	Libra.
The Ounce,	“	℥	“ Uncia.
The Drachm,	“	ʒ	“ Drachma.
The Scruple,	“	ʒ	“ Scrupulum.
The Grain,	“	gr.	“ Granum.

In the Pharmacopœia of 1870,* the pound,

* In the U. S. Ph. of 1880 the quantities of substances were expressed simply in *parts by weight*. This permitted the use of either the Troy or the Metric weights and was in reality a step toward the adoption of the latter. In the present Pharmacopœia (revision of 1900) the Metric System is exclusively employed.

drachm and scruple were all omitted, and all weights expressed in ounces and grains. This was done to avoid confounding the Troy and the Avoirdupois pounds. It would undoubtedly be safer if this practice were followed in prescription writing; as many errors have occurred through mistaking the \mathfrak{D} for the 3. If hastily written they may resemble each other very much. But the old signs are so endeared by long familiarity and use that they will probably never be given up as long as this system continues in vogue. The *measures* are derived from the *wine gallon*, and are—

The Gallon, Symbol C. Latin Congius.

The Pint, “ O. “ Octarius.

The Fluidounce “ $\mathfrak{f}\mathfrak{z}$. “ Fluiduncia.

The Fluidrachm, “ $\mathfrak{f}\mathfrak{z}$. “ Fluidrachma.

The Minim, “ \mathfrak{m} . “ Minimum.

To distinguish the fluidounce and the fluidrachm from the ounce and drachm, the letter *f* should be put before the respective symbols. This is very commonly omitted, it being generally understood that fluids are to be measured, and not weighed. If the prescription is to go out

of this country this should not be done, as the omission would lead, in some parts of the world, to the ingredients all being weighed.

The following tables indicate the relative value of the different weights and measures:

APOTHECARIES' OR TROY WEIGHT.

Pound.	Ounces.	Drachms.	Scruples.	Grains.
lb. 1	= 12	= 96	= 288	= 5760
	$\frac{3}{4}$ 1	= 8	= 24	= 480
		3 1	= 3	= 60
			℥ 1	= 20

APOTHECARIES' OR WINE MEASURE.

Pound.	Ounces.	Drachms.	Scruples.	Grains.
C. 1	= 8	= 128	= 1024	= 61440
	O. 1	= 16	= 128	= 7680
		f $\frac{3}{4}$ 1	= 8	= 480
			f 3 1	= 11 60

In the British Pharmacopœia the weights and measures differ somewhat from ours. Their pound contains 16 ounces and 7000 grains; the ounce has therefore 437.5 grains. Their pint has 20 fluidounces and the fluidounce is equal to 7 fluidrachms and 2.5 minims, the

minim therefore being equal to .96 of our minim. These facts must be borne in mind when taking formulæ from English books. Quantities are always expressed, except fractions, by the numeral adjectives or their symbols.

NUMERAL ADJECTIVES.

	CARDINALS.	ORDINALS.
1	I Unus	1st Primus
2	II Duo	2nd Secundus
3	III Tres	3rd Tertius
4	IV Quatuor	4th Quartus
5	V Quinque	5th Quintus
6	VI Sex	6th Sextus
7	VII Septem	7th Septimus
8	VIII Octo	8th Octavus
9	IX Novem	9th Nonus
10	X Decem	10th Decimus
11	XI Undecim	11th Undecimus
12	XII Duodecim	12th Duodecim
13	XIII Tredecim	13th Tertius decimus
14	XIV Quatuordecim	14th Quartus decimus
15	XV Quindecim	15th Quintus decimus
16	XVI Sexdecim	16th Sextus decimus
17	XVII Septendecim	17th Septimus decimus
18	XVIII Octodecim	18th Octavus decimus

or minim doses. We direct instead that our patients shall employ some domestic measure with which they are familiar, and which is supposed to contain something very near to some one of the regular measures. Such domestic measures are

The Teaspoon supposed to contain 1 drachm.

The Dessertspoon " " " 2 "

The Tablespoon " " " 4 "

The Wineglass " " " 2 fluidounces

It becomes very evident on a superficial examination that such measures are extremely unreliable. Teaspoons, for instance, vary all the way from one-half to two drachms; while a wineglass may hold from one and a half to three fluidounces. A case occurred recently in England where an infant was killed by the dose of a mixture containing opium being measured in a teaspoon which held nearly two drachms. Other similar instances with somewhat less unfortunate results have probably happened very frequently.

Exactitude in dosing is one of the things in which the  been singularly lax.

We know that the action of medicines varies markedly with size of the dose; and knowing this, it is certainly curious that we do not take more pains to see that our patients get the amount we intended, rather than one-half or twice as much. In order to accomplish this, every practitioner should insist on each patient or family's providing themselves with a properly graduated glass for measuring doses. Such a glass can be purchased at almost any drug store at a small cost. Many of the medicine glasses in the market are very faulty. Those imported from England are graduated according to the Imperial and not the Wine measure, and are therefore incorrect. The best glasses are those of a conical shape, carefully marked with teaspoonful and tablespoonful measures, the teaspoonful being exactly a drachm and so on. Those shaped like a tumbler are too large at the bottom to measure as small a quantity as a teaspoonful with anything like accuracy.

It is customary with many practitioners to write for so many *drops* in their prescriptions, or to order the patient to take so many drops

of a certain preparation. This practice cannot be too severely condemned. The size of a drop depends on so many factors, such as the density of the fluid, the shape of the vessel from which it is dropped, the steadiness of the hand, that it is a most uncertain quantity and does not even approximate to a minim, as is generally supposed. Several patent droppers have been introduced, but they do not at all remove the difficulty. If it is desired to administer small quantities of an undiluted liquid, the best way is to employ the minim pipette.* This is a tube of glass divided by marks on its surface into minims, usually up to ten. The method of using this little instrument is so simple that any one can accomplish it after a few minutes' practice. Place the finger over the top, put it into the bottle down to the bottom, raise the finger for a moment to allow the fluid to run in, and then replace the finger and raise the tube to the top and let the fluid run out very slowly until it is down to the required mark.

To show the difference in the size of drops of

* Introduced by Dr. Squibb of Brooklyn.

different fluids, I add the following table, which, although by no means complete, is sufficient to illustrate the points given.

TABLE OF DROPS IN A FLUIDRACHM.

Acetum Opii.	70 to 90
Acidum Hydrocyan. Dil.	45
Acidum Sulphuric, Arom.	116 " 148
Acidum Sulphuric, Dil.	54 " 49
Æther.	150
Alcohol.	120 " 143
Chloroform.	180 " 276
Liq. Potas. Arsenit.	59 " 63
Oleum Carui.	106 " 108
Oleum Ricini.	55
Syrupus Scillæ.	85 " 88
Tinct. Aconiti. Rad.	118 " 130
" Ferri Chloridi.	106 " 151
" Opii.	106 " 147
" Opii. Camph.	95 " 110

CHAPTER III.

PREPARATIONS.

1. *Official Preparations.*—It is evidently essential that, in order to avoid confusion, there should be some recognized official list of drugs, and a perfect uniformity in the method of making the different preparations. In many countries this is done under the order of government, and is made a matter of law; but in the United States the government has left it entirely to the profession, and conformity is only secured by voluntary action. The medical and pharmaceutical professions appoint a joint committee to whom this work is deputed. The book containing the list of drugs and the method of making the different preparations which is published by this committee is called the United

States Pharmacopœia.* It is revised once in ten years, when new drugs and preparations, which have stood the test of practice and experience, are added. The drugs which are found in the list of the Pharmacopœia are called *official drugs*, and the preparations *official preparations*.

The U. S. Ph. of 1880 differs in its arrangement from the previous one. It contains a list of most of the drugs in use, with a brief description of each, together with the preparations to be made from the crude drugs, if any, and the methods of their manufacture. The drugs and their preparations are arranged alphabetically for ease of reference.

Of the preparations there are thirty-three classes; and a knowledge of them, their strength or proper dose, and of their general pharmaceutical relations, is essential before any one can intelligently write prescriptions.

The *official preparations* are as follows:

AQ'UA.—A *water* is a solution of a volatile substance in water. There are 21 official.

* Usually abbreviated to U. S. Ph., British Ph. to B. Ph., etc. In France it is called the *Codex*.

Aqua Ammoniaë.	Aqua Creasoti.
“ Ammoniaë Fortior.	“ Distillata.
“ Amygdalæ Amare.	“ Fœniculi.
“ Anisi.	“ Hamamelidis.
“ Aurantii Florium.	“ Hydrogenii
“ Aurantii Florium	Dioxidii.
Fortior.	“ Menthæ Piperitæ.
“ Camphoræ.	“ Menthæ Viridis.
“ Chlorformi.	“ Rosæ.
“ Cinnamomi.	“ Rosæ Fortior.

LI'QUOR.—A *solution* is a preparation made by dissolving a non-volatile substance in water. The U. S. Ph. includes 25.

Liquor Acidi Arsenosi.	Liquor Ferri Subsulphatis.
Ammonii Acetatis.	(Monsel's sol.)
Antisepticus.	Ferri Tersulphatis.
Arseni et Hydrargyri	Formaldehydi.
Iodidi.	Hydrargyri Nitratis.
(Donovan's sol.)	(Lugol's sol.)
Calcis.	Iodi Compositus.
Chlori Compositus.	Magnesii Citratis.
Cresolis Compositus.	Plumbi Subacetatis.
Ferri Chloridi.	(Goulard Extract.)
Ferri et Ammonii Ace-	Plumbi Subacetatis
tatis. (Basham's	Dilutus.
mixt.)	(Lead Water.)

Liquor Potassi Arsenatis.	Liquor Sodæ Phosphatis.
(Fowler's sol.)	Comp.
Potassi Citratis.	Sodii Arsenatis.
Potassi Hydroxidi.	Sodii Hydroxidi.
Sodæ Chlorinatae	Zinci Chloridi.

EMUL'SUM.—An *emulsion* is a preparation in which one or more insoluble medicines are held in suspension, in a state of minute subdivision, by a suitable vehicle, in water. 6 are official.

Emulsum Amygdalæ.	Emulsum Olei Morrhuæ.
(Milk of Almond.)	Olei Morrhuæ cum
Asafoetidæ.	Hypophosphitibus.
Chloroformi.	Olei Terebinthinæ.

MISTU'RA.—The class of *mixtures* comprises combinations of various character, not otherwise conveniently classified. 4 are official.

Mistura Cretæ.	Mistura Glycyrrhizæ Com-
" Ferri Composita.	posita.
	Mistura Rhei et Sodæ.

MUCILA'GO.—A *mucilage* is a solution of a gummy substance in water. There are only 4.

Mucilago Acaciæ.	Mucilago Tragacanthæ.
" Sassafras Medullæ.	" Ulmi.

INFU'SUM.—An *infusion* is a preparation made from a vegetable drug by the aid of cold or hot water, but without boiling. They are prepared either by displacement or maceration. Of official Infusions there are 3.

Infusum Digitalis. Infusum Sennæ Compositum.
 " Pruni Virginianæ. (Black Draught.)

DECOC'TA—A *decoction* is made by boiling a vegetable drug for fifteen minutes in water. There are no official decoctions, although a formula is given for their preparation.

SYRU'PUS.—A *syrup* is a stronger solution of sugar in water, either simple or combined with some medicinal substance. Sometimes diluted alcohol is added (marked A in list), and several of them, as Syr. Scillæ, Syr. Alii, Syr. Acidi Citrici and Syr. Limonis, are acid in their reaction. In the Pharmacopœia we find 29.

Syrupus Acaciæ.	Syrupus Aurantii Florum
" Acidi Citrici.	" Calcii Lactophos-
" " Hydriodici.	phatis.
" Amygdalæ.	" . Calcis.
" Aurantii.	" Ferri Iodidi,

Syrupus Ferri Quininae et		Syrupus Rhei Aromaticus.	
"	Strychninae,	"	Rosae.
"	Phosphatum.	"	Rubi.
"	Hypophosphitum.	"	Sarsaparillae
"	" Comp.	"	Comp.
"	Ipecacuanhae.	"	Scillae.
"	Krameriae	"	" Comp.
"	Lactucarii.	"	Senegae.
"	Picis Liquidæ. (A)	"	Sennae.
"	Pruni Virginianæ.	"	Tolutanus.
"	Rhei.	"	Zingiberis. (A)

ELIX'IR.*—An *elixir* is a preparation usually made with dilute alcohol as a menstruum, and rendered pleasant to the taste by the addition of aromatics and very generally sugar. There are 4 official.

Elixir Adjuvans.		Strychninae Phos-	
"	Aromaticum.	phatum.	
	(Simple Elix.)	Elixir Paregoric (Tinctura	
"	Ferri, Quininae et	Opii Camphorata).	

TINCTU'RA.—A *tincture* is an alcoholic solution made from the crude drug, by maceration or percolation, or by dissolving non-volatile principles. There are 62 official tinctures:

* The word is indeclinable.

Tr. Aconiti.	Tr. Gentianæ Comp.
“ Aloes.	“ Guaiaci.
“ “ et Myrrhæ.	“ “ Ammoniata.
“ Arnicæ.	“ Hydrastis.
“ Asafoetidæ.	“ Hyoscyami.
“ Aurantii Amari.	“ Iodi.
“ “ Dulcis.	“ Ipecacuanhæ et Opii.
“ Belladonnæ Foliorum	“ (Fluid Dover's Powd.)
“ Benzoini.	“ Kino.
“ “ Comp.	“ Krameriæ.
“ Calendulæ.	“ Lactucarii.
“ Calumbæ.	“ Lavandulæ Comp.
“ Cannabis Indicæ.	“ Limonis Corticis.
“ Cantharidis.	“ Lobeliæ.
“ Capsici.	“ Moschi.
“ Cardamomi.	“ Myrrhæ.
“ “ Comp.	“ Nucis Vomicæ.
“ Cimicifugæ.	“ Opii.
“ Cinchonæ.	“ “ Camphorata.
“ “ Comp.	“ “ Deodorati.
“ Cinnamomi.	“ Physostigmatis.
“ Colchici Seminis.	“ Pyrethri.
“ Digitalis.	“ Quassia.
“ Ferri Chloridi.	“ Quillajæ.
“ Gallæ.	“ Rhei.
“ Gambir Comp.	“ “ Aromatica.
(Comp. Tr. Catechu.)	“ Sanguinaræ.
“ Gelsemii.	

Tr. Scillæ.	Tr. Valerianæ.
" Serpentariæ	" Valerianæ Ammoniata.
" Stramonii.	" Vanillæ.
" Strophanthi.	" Veratri.
" Tolutana.	" Zingiberis.

There is also a general formula for the manufacture of tinctures of fresh herbs,

Tincturæ Herbarium Recentium,

according to which they are to be prepared when not otherwise directed.

SPIR'ITUS.—A *spirit* is a solution of a volatile principle, or principles, in alcohol. They are made by distillation from the pure drug, or by simple solution. There are 20 in the list.

Spiritus Ætheris.	Spiritus Cinnamomi.
" " Comp.	" Frumenti.
" " Nitrosi.	" Gaultheriæ.
" Ammoniæ.	" Glycerylis Nitratis
" Aromaticus.	" Juniperi.
" Amygdalæ Amaræ.	" " Comp.
" Anisi.	" Lavandulæ.
" Aurantii Comp.	" Menthæ Piperitæ.
" Camphoræ.	" " Viridis.
" Chloroformi.	" Vini Gallici.

VINUM.—A *wine* is a preparation made with white wine. 10 are official.

Vinum Album.

" Antimonii.

" Cocæ.

" Cochici Seminis.

" Ergotæ.

Vinum Ferri.

" " Amarum.

" Ipecacuanhæ.

" Opii.

" Rubrum.

ACE'TUM.—A *vinegar* is a preparation made by using vinegar or dilute acetic acid as a menstruum. Only 2 are official.

Acetum Opii.

Acetum Scillæ.

MEL.—A *honey* is prepared with honey as a basis. They are little used, but 2 being in the list.

Mel Despumatum.

Mel Rosæ.

GLYCERI'TUM.—A *glycerite* is a preparation having glycerine for a menstruum. There are only 6 official.

Glyceritum Acidi Tannici.

" Amyli.

" Boroglycerini.

" Ferri Quininae.

et Strychninae Phosphatum.

Glyceritum Hydrastis.

" Phenolis.

OLEUM DESTILLA'TUM.—*Volatile, Distilled, or Essential Oils* are volatile oily principles obtained by distillation. There are 36 official.

Oleum Æthereum.	Oleum Juniperi.
" Amygdalæ Amaræ.	" Lavandulæ Florum.
" Anisi.	" Limonis.
" Aurantii Corticis.	" Menthæ Piperitæ.
" Betulæ.	" Menthæ Viridis.
" Cadinum.	" Myristicæ
" Cajupti.	(Oil of Nutmeg).
" Cari.	" Picis Liquidæ.
" Caryophylli.	" Pimentæ
" Chenopodii.	(Oil of Allspice).
" Cinnamomi.	" Rosæ.
" Copaibæ.	" Rosmarini.
" Coriandri.	" Sabinæ.
" Cubebæ.	" Santali.
" Erigerontis.	" Sassafras.
" Eucalypti	" Sinapis Volatile.
" Fœniculi.	" Terebinthinæ.
" Gaultheriæ	" Terebinthinæ Rec-
(Oil of Wintergreen).	tificatum.
" Hedeomæ	" Thymi.
(Oil of Pennyroyal).	

For convenience of comparison I give the list of official fixed oils. They are:

is one exception, the Fluidextractum Sarsaparillæ Co. (10-7.5). All except two contain alcohol and some of them contain glycerine as a preservative.

There are more of the fluidextracts than of any other class, viz 85.

Fluidextractum Aconiti.	Fluidextractum Cubebæ.
" Apocyni.	" Cypripedii.
" Aromaticum.	" Digitalis.
" Aurantii Amari.	" Ergotæ.
" Belladonnæ Rad- icis.	" Eriodictyi.
" Berberidis.	" Eucalypti.
" Buchu.	" Euonymi.
" Calami.	" Eupatorii.
" Calumbæ.	" Frangulæ.
" Cannabis Indicæ.	" Gelsemii.
" Capsici.	" Gentianæ.
" Chimaphilæ.	" Geranii.
" Chirataë.	" Glycyrrhizæ.
" Cimicifugæ.	" Granati.
" Cinchonæ.	" Grindeliæ.
" Cocæ.	" Guaranæ.
" Colchici Seminis.	" Hamamelidis Foliorum.
" Conii.	" Hydrastis.
" Convallariæ.	" Hyoscyami.

Fluidextractum Ipecacu-	Fluidextractum Sabinæ.
anhæ.	" Sanguinariæ.
" Krameriæ.	" Sarsaparillæ.
" Lappæ.	" Sarsaparillæ Com-
" Leptandræ.	positum.
" Lobeliæ.	" Scillæ.
" Lupulini.	" Scopolæ.
" Matico.	" Scutellariæ.
" Mezerei.	" Senegæ.
" Nucis Vomicae.	" Sennæ.
" Pareiræ.	" Serpentariæ.
" Phytolaccæ.	" Spigeliæ.
" Pilocarpi.	" Staphisagriæ.
" Podophylli.	" Stillingiæ.
" Pruni Virgininæ.	" Stramonii.
" Quassiæ.	" Sumbul.
" Quercus.	" Taraxaci.
" Quillajæ.	" Tritici.
" Rhamni Purshi-	" Uvæ Ursi.
anæ.	" Valerianæ.
" Rhamni Purshi-	" Veratri.
anæ Aromaticum.	" Viburni Opuli.
" Rhei.	" Viburni Pruni-
" Rhois Glabræ.	folii.
" Rosæ.	" Xanthoxyli.
" Rubi.	" Zingiberis.

CONFEC'TIO.—A *confection* is composed of

medicinal substances beaten up with sugar or honey, or both, until a thick mass is obtained. There are 2 confections official.

Confectio Rosæ.

Confectio Sennæ.

TROCHIS'CUS.—A *troche* or lozenge is prepared by incorporating medicinal powders with sugar and a gum. They are meant to dissolve slowly in the mouth. 9 are official.

Trochisci Acidi Tannici.

Trochisci Krameriæ.

“ Ammonii Chlor-
idi.

“ Potassii Chlor-
atis.

“ Cubebæ.

“ Santonini.

“ Gambir.

“ Sodii Bicarb-

“ Glycyrrhizæ et
Opii.

natis.

UNGUEN'TUM.—An *ointment*. These preparations are made of various combinations of medicinal agents with lard, wax, paraffin, petrolatum, olive oil, etc. either combined or alone.* They are meant for external application only. The number is 24.

*Ungt. Aq. Rosæ contains spermaceti and white wax. The Ungt. Picis Liq. is made with lard and yellow wax, the Ungt. Diachylon with olive oil, and the Ungt. Hydrarg. nitrat. with lard.

Unguentum Acidi Borici.	Unguentum Hydrargyri Oxi-
“ Acidi Tannici.	di Flavi.
“ Aquæ Rosæ.	“ Hydrargyri Oxi-
“ Belladonnæ.	di Rubri.
“ Chrysarobini.	“ Iodi.
“ Diachylon.	“ Iodoformi.
“ Gallæ.	“ Phenolis.
“ Hydrargyri.	“ Picis Liquidæ.
“ Hydrargyri	“ Potassii Iodidi.
Ammoniati.	“ Stramonii.
“ Hydrargyri	“ Sulphuris.
Dilutum.	“ Veratrinæ.
“ Hydrargyri	“ Zinci Oxidi.
Nitratis.	“ Zinci Stearatis.

CERA'TUM.—A *cerate* is similar to an ointment, but is of firmer consistency. There are 6.

Ceratum.	Ceratum Resinæ.
Ceratum Camphoræ.	“ Resinæ Compos-
“ Cantharidis	itus.
“ Plumbi Subace-	
tatis.	

SUPPOSITO'RIA.—*Suppositories* are solid bodies of various weights and shapes, adapted for introduction into the rectum, vagina or urethra. They usually have as a basis oil of Theobroma, or

Glycerinated Gelatin, which melt at the temperature of the body. The U. S. Pharmacopœia gives general directions for preparing such as are made with these for bases. One kind, differing in manner of preparation, is official.

Suppositoria Glycerini.

EMPLAS'TRUM.—A *plaster* is made by spreading certain solid substances, with the aid of heat, on leather, muslin, or other suitable material. They are adhesive at the temperature of the body. There are 7 members of this class.

Emplastrum Adhesivum

Emplastrum Capsici.

“ Belladonnæ.

“ Plumbi.

“ Hydrargyri.


“ Saponis.

“ Opii.

CHAR'TA.—A *paper** is a medicated sheet of paper for external use for fumigation. One is official. It is:

Charta Sinapis.

*Distinguished from *chartula*, a little package or paper of a medicinal powder, such as are ordered in prescriptions.



COLLO'DIUM.—A *collodion* is a solution of gun-cotton in ether. 4 are official.

Collodium.

Collodium Flexile.

" Cantharidatum.

" Stypticum.

LINIMEN'TUM.—A *liniment* is a liquid preparation for external use. Most of them contain soap or some kind of oil. There are 8 official.

Linimentum Ammoniaë.

Linimentum Chloroformi.

" Belladonnæ.

" Saponis.

" Calcis.

" Saponis Mollis.

" Camphoræ.

" Terebinthinæ.

OLEA'TUM.—An *oleate* is a solution of a medicinal substance in oleic acid. 5 are official.

Oleatum Atropinæ.

Oleatum Quininæ.

" Cocainæ.

" Veratrinæ.

" Hydrargyri.

MAS'SA.—A *mass* is a combination of medicinal agents, made of a proper consistency for making into pills, which can be ordered to be of any desired weight. There are 2 official.

Massa Ferri Carbonatis.

Massa Hydrargyri.

PIL'ULA.—A *pill* is a small spherical body containing certain medicinal agents. The official

pilulæ are pills of a certain composition and weight which are kept ready-made. There are 14 official formulæ.

<i>Pilulæ Aloes.</i>	<i>Pilulæ Ferri Carbonatis</i>
" Aloes et Ferri.	" Ferri Iodidi.
" Aloes et Mastiches.	" Laxative Compositæ.
" Aloes et Myrrhæ.	" Opii.
" Asafoetidæ.	" Phosphori.
" Catharticæ Comp.	" Podophylli Belladonna et Capsici.
" Catharticæ Vegetabiles.	" Rhei Compositæ.

PULVIS.—A *powder* is any drug reduced to a state of minute subdivision by pulverization. The Pharmacopœia gives 9.

<i>Pulvis Acetanilidi Comp.</i>	<i>Pulvis Ipecacuanhæ et Opii.</i>
" Aromaticus.	" Jalapæ Comp.
" Cretæ Comp.	" Morphinæ Comp.
" Effervescens Comp.	" Rhei Compositus.
" Glycyrrhizæ Comp.	

TRITURATIO.—A *trituration* is an active substance rubbed up to a state of most minute subdivision with Sugar of Milk. They contain ten per cent. of the active substance. The

formula given by the U. S. Pharmacopœia for the manufacture of triturations is:

The medicinal substance	10 Gm.
Sugar of milk.....	90 "
	<hr/>
	100

There is one trituration named in the Pharmacopœia.

Trituratio Elaterini.

It will be noticed that there are often two preparations of the same class. These are distinguished either by some word referring to their difference of character, as the *Extractum Glycyrrhizæ* and the *Extractum Glycyrrhizæ Purum*, or where other substances are added, by the addition of the word *Compositus*, as *Syrupus Scillæ* and *Syr. Scillæ Compositus*.

SERUM.—A fluid separated from the coagulated blood of some animal, immunized by inoculation.

There is only one official.

Serum Antidiphthericum.

2. *Non-Official Preparations.*—Besides the preparations of the U. S. Ph. there are others

in common use, a knowledge of which is very convenient. Among them are:

EN'EMA.—An *Enema* or *Clyster* is a liquid for injection into the rectum. There are 6 official in the Br. Ph.

DIS'CUS.—A *Disk* is a small rounded scale of gelatine impregnated with some medicinal substance. They are sometimes employed by oculists for introducing atropia, etc., into the eye.

GRAN'ULUM.—A *Granule* is a very small pill. They generally contain only active principles or very active drugs.

DRAGEE.—A *Dragée* is a sugar-coated pill. They are mostly French in their origin.

BOU'GIA.—A *Bougie* is a small cylinder of cacao butter, or gelatine and glycerine, impregnated with some active substance, intended for introduction into certain canals of the body, such as the male urethra, and the uterine cavity. They are usually of the diameter of a No. 9 catheter and about 2 inches long.

PESSA'RIA.—*Pessary* is a name given to vaginal suppositories.

ABSTRAC'TUM.—An *abstract* is a preparation

in form of a powder, possessing twice the medicinal strength of the crude drug.

TABLETS.—Under Tablets we have three varieties,—Tablet Triturates, Compressed Tablets, and Coated Tablets. The coated are either of the other two, covered with chocolate, sugar or gelatine.

The Tablet Triturates are made by triturating the drug or active principle with sugar of milk, and then moistening with alcohol, drying the product in moulds.

The Compressed Tablets are made in the same way as Tablet Triturates, but are dried under pressure. They are usually much larger.

In ordering any of these preparations, as there are no official formulæ, it is necessary either to write out the formula in full or else to indicate the name of the manufacturers whose particular formula is desired, e. g., *R. Elixir Ferri et Quininæ* (Jones & Co.) $\frac{3}{4}$ iv.

CHAPTER IV.

THE GRAMMATICAL CONSTRUCTION OF A PRESCRIPTION.

As has been already indicated, the names and quantities of the ingredients of a prescription, as well as the directions to the compounder, are generally written in Latin. This has been the custom from time immemorial. It is not, however, imperative; and if the physician so desire he may use English, or any other language more likely to be understood. This is rarely done. The use of Latin is so firmly fixed by custom and habit, and has so many advantages, that its disuse would be a step backwards. Still there are some who decry it, and even accuse the profession of being pedantic, and of seeking to throw an air of mystery around this

very simple act, by which unduly to impress their patients. The arguments in favor of Latin are strong enough to overcome all objections, and to fully warrant the practice. Latin is a dead language, and consequently is fixed, crystallized as it were, beyond all chance of change. In this respect it possesses great advantages over the vernacular. Again, Latin is universally studied and more or less understood; and is moreover the language of science throughout the world.

The botanical and chemical names of all our medicines are in Latin, and it is therefore the language employed in the nomenclature of all Pharmacopœias. The advantages of fixed and unchangeable names for our medicines are at once apparent when we see to how many plants the same name is given in different parts of the country. No less than five different medicinal plants are called *snake-root*, all having different actions and belonging to different therapeutical groups. *Wintergreen* applies equally to Gaultheria and Chimaphila. There are other and even more striking instances of the same thing.

There are other reasons which may be urged in favor of Latin as the language of prescriptions. Our prescriptions are often carried to distant lands, where, if written in English, they would not be likely to be understood, so that the patient might die before they could be translated, but where every druggist's clerk can decipher them if correctly written in Latin. Again, it may be for the advantage of a patient not to know what he is taking. People often become possessed with the idea that they cannot take this or that drug, the very drug perhaps which it is advisable for them to take. Now while such ideas are always to be respected if they are well-founded, they may often be shown to be the result of silly or ill-founded prejudices. To overcome these prejudices we may labor in vain; but we accomplish the same thing by concealing the dreaded drug in some mixture or pill, with a long Latin name, much to the benefit of our unsuspecting patient.

Latin then being the language of prescriptions, it behooves all students to master at least its rudiments. It is no part of my plan to write

a Latin grammar,* for the benefit of those whose education is defective in this respect. I shall presume that my readers are familiar at least with the declensions and simple rules of syntax, and shall only give a few rules, which may serve to call to mind the general principles already learned.

RULE 1st. The noun expressing the name of the medicine is put in the genitive case when the quantity of it to be used is expressed.

RULE 2d. If no quantity is expressed, but only a numeral adjective follows, the noun is put in the accusative.

RULE 3d. The quantity is put in the accusative case, governed by the imperative *Recipe*.

RULE 4th. Adjectives agree with these nouns in gender, number, and case.

* Those not familiar with the rudiments of Latin will find great assistance in a careful study of the most excellent little book by Dr. F. R. Gerrish, on "Prescription Writing. Designed for the use of medical students who have never studied Latin." Another book which is an efficient aid to the student in acquiring a practical knowledge of medical Latin is "The Latin Grammar of Pharmacy and Medicine," by D. H. Robinson, published by P. Blakiston, Son & Co., Philadelphia.

We very seldom have occasion to use the accusative of the nouns expressing the ingredients, only when the quantity is omitted and a numerical adjective takes its place.

The accusative of the different words used to express quantity is seldom written, as has already been indicated, being generally expressed by the appropriate symbols. Sometimes, however, it is required to write them out in full. I therefore append two simple rules for the formation of the accusative of these words. They apply, with a very few exceptions, to all nouns with the same endings.

RULES FOR THE FORMATION OF THE ACCUSATIVE CASE.

RULE 1st. Nouns expressing quantity, ending in **a**, are feminine, and make the accusative singular in **am** and the plural in **as**.

Example. Drachma, acc. sing. Drachmam, pl. Drachmas.

RULE 2d. Those ending in **um** or **us** make the accusative singular in **um**. The accusative plural of those in **us** is in **os**, and of those in **um** in **a**. Those in **us** are masculine, those in **um** are neuter—

Congius, acc. sing. Congium acc. pl. Congios.

Granum " " Granum " " Grana.

The adjectives are declined like the nouns.

The numeral cardinal adjectives are indeclinable except unus, duo and tres.

They are thus declined:

	<i>Masculine.</i>	<i>Feminine.</i>	<i>Neuter.</i>
nom.	unus.	una.	unum.
gen.	unius.	unius.	unius.
acc.	unum.	unam.	unum.
nom.	duo.	duæ.	duo.
gen.	duorum.	duarum.	duorum.
acc.	duos.	duas	duo.
nom.	tres.	tres.	tria.
gen.	trium.	trium.	trium.
acc.	tres.	tres.	tria.

The ordinals are all regular.

The verbs are nearly all used in the imperative mood, being addressed to the compounder. Only a few prepositions are commonly used; they are *ad*, to; *ana*,* of each; *cum*, with; *in*, into; *ad* and *in* govern the accusative, *cum* the ablative, and *ana* the genitive cases.

*Ana is Greek, the rest are Latin.

CHAPTER V.

THE PRINCIPAL WORDS AND PHRASES USED IN PRESCRIPTIONS, WITH THEIR PRONUNCIATION AND ABBREVIATIONS.

THERE are certain words and phrases used in prescriptions, a knowledge of which is all-important. There are others, which are seldom used in this country, but which are so frequently met with in foreign books, that familiarity with them becomes a matter of great convenience. It would be very inconvenient, to say the least, to be obliged to refer to a dictionary before one could read an ordinary prescription in an English work. The *pronunciation* of these words is also of considerable importance; the mistakes which are commonly made, even by those of highest rank in the profession, being truly lamentable. Among the members of the Faculty

of one of our metropolitan schools, no less than three pronunciations are given to the word *Podophyllum*,* while the word *enema* is almost invariably mispronounced.

In the following list I have tried to give only such words as may be of use, omitting many which are very seldom used. For a full list see "Pereira's Prescription Book."

Certain of these are commonly expressed by abbreviations, as Griffiths puts it, either "from hurry, laziness, or ignorance," and, I would add, convenience.

LATIN WORD.	ABBREVIATION.	TRANSLATION.
Abstrac'tum	Abst.	An abstract.
Ac'idum	Acid.	An acid.
Ad		To, up to.
Ad lib'itum	Ad lib.	At pleasure.
Adde	Add.	Add. (thou).
Ana <i>an</i>	A. āā.	Of each.
Aqua-bul'liens,	Aq. bull.	Water, boiling.
"fonta'na, fervens,	"font., ferv.	"spring, hot.
"pluvia'lis	"pluv.	"rain.
"destilla'ta	"dest.	"distilled.

* For pronunciation of the names of medicines, see Chap. VII.

LATIN WORD.	ABBREVIATION.	TRANSLATION.
Aqua'lis		Pertaining to water.
Bene		Well.
Bis in dies	Bis.ind.	Twice daily.
Bulliat, bulliant	Bull.	Let boil.
Cape, Capiat	Cap.	Take. Let him take.
Cap'sula	Caps.	A capsule.
Cera'tum	Cerat.	A cerate.
Char'ta (<i>karta</i>)	Chart.	A paper (medicated).
Chartula(<i>kartula</i>)	Chart.	A little paper for a powder.
Cibus	Cib.	Food.
Cochle'are mag'num	Coch.mag.	A tablespoon.
Cochle'are par'vum	Coch.parv.	A teaspoon.
Cola. Colatus	Col.	Strain. Strained.
Collyr'ium	Collyr.	An eye wash.
Colluto'rium	Collut.	A mouth wash.
Compos'itus	Co. Comp.	Compound.
Con'gius	C.	A gallon
Confec'tio	Conf.	A confection.
Cor'tex	Cort.	Bark.
	C.c.	A cubic centimeter or cubic centimeters.
Cum		With.
Decoc'tum	Decoc.	A decoction.
Dilute, Dilu'tus	Dil.	Dilute (thou), diluted.
Dimid'ius	Dim.	One-half.
Div'ide	D. Div.	Divide (thou).

LATIN WORD.	ABBREVIATION.	TRANSLATION.
Dividen'dus	Dividend.	To be divided.
Divida'tur in partes	D.in.p.æq.	Let it be divided into
æqua'les		equal parts.
Do'sis	Dos.	A dose.
Emplas'trum	Emp.	A plaster.
En'ema	Enem.	An enema.
Exten'de supra	Exten.sup.	Spread upon.
Extrac'tum	Ext.	An extract.
Fac, fiat, fiant	F.	Make, let be made, let them be made.
Fil'trum, Filtra	Fil.	A filter. Filter (thou).
Flu'idus	Fl. f.	Fluid.
Gargaris'ma	Garg.	A gargle.
Glyceri'tum	Glyc.	A glycerite.
Grammum, Gramma	Gm.	A gram, grams,
Gutta, Gutte	Gtt.	A drop, drops.
Gutta'tim	Guttat.	Drop by drop.
Haus'tus	Haust.	A draught.
Hora	H. Hor.	An hour.
In dies	Ind.	Daily.
Infus'um	Inf.	An infusion.
Injec'tio	Inj.	An injection.
In'star	Inst.	Like (<i>with genitive</i>).
Lac		Milk.
Lage'na (<i>Lajena</i>)		A flask or bottle.
Libra	lb.	A pound, a Troy pound
Liquor, or Li'quor	Liq.	A solution.

LATIN WORD.	ABBREVIATION.	TRANSLATION.
Lo'tio (<i>losheo</i>)		A lotion.
Mane primo	Mane pr.	Very early in the morning.
Magnus	Mag.	Large.
Mas'sa	Mass.	A pill-mass.
Mica pa'nis (<i>mika</i>)	Mic. pan.	A crumb of bread.
Misce	M.	Mix.
Mistu'ra	Mist.	A mixture
Mucila'go	Mucil.	A mucilage.
Nox, Nocte mane'- que		Night, at night and in the morning.
Nu'merus, Numero	No.	A number, in number.
Octarius	O.	A pint.
Ovum, ovi	Ov.	An egg.
Pars	Par.	A part (<i>governs genitive.</i>)
Partes æqua'les	P. æ.	Equal parts.
Parvus	Parv.	Small.
Pedilu'vium		A foot-bath.
Penicil'lum Came- li'num	Penicil. Cam.	A camel's-hair pencil or brush.
Per fis'tulam vit'-ream		Through a glass tube.
Phia'la	Phil.	A vial.
Pil'ula	Pil.	A pill.
Pro re nata	P. r. n.	According to circumstances, occasionally.

LATIN WORD.	ABBREVIATION.	TRANSLATION.
Pul'vis	Pulv.	A powder.
Quantum Suffic'iat	Q.S. (<i>followed by genitive</i>)	As much as is necessary.
Quâquâ horâ	Q. h.	Every hour.
Satura'tus	Sat.	Saturated.
Scat'ula	Scat.	A box.
Semis'sis	Ss.	A half.
Semidrach'ma	Semidr.	A half drachm.
Sesun'cia	Sesunc.	An ounce and a half.
Sig'na	S. Sig.	Sign.
Sine		Without.
Solve, Solu'tus	Solv.	Dissolve, dissolved.
Solu'tio	Sol.	A solution.
Spir'itus	Spr.	A spirit.
Sta'tim	Stat.	Immediately.
Supposito'ria	Suppos.	A suppository.
Syru'pus	Syr.	A syrup.
Talis	Tal.	Such, or, like.
Tinctu'ra	Tra., Tr.	A tincture.
Trochis'cus (<i>Trokis-</i> <i>cus.</i>)	Troch.	A troche.
Trit'ura	Trit.	Triturate.
Tere Simul	Ter. Sim.	Rub together.
Ter in die	T.i.d.	Three times a day.
Unguen'tum	Ungt.	An ointment.
Vi'num	Vin.	A wine.
Vehic'ulum	Vehic.	A menstruum.

LATIN WORD.	ABBREVIATION.	TRANSLATION.
Vitel'lus	Vit.	The yolk (of an egg).
Vitello ovi Solutus	V. O. S.	Dissolved in the yolk of an egg.

Besides the abbreviations already given, it is customary to abbreviate the names of drugs; for example, *Quinina* is abbreviated to *Quin.*; *acidum carbolicum* to *acid. carbol.* Nearly all writers on this subject condemn the use of abbreviations as altogether bad; nevertheless, the profession go on using them and probably will do so as long as prescriptions are written: and with reason. Some words are just as well understood by a short and concise abbreviation as if they were written out in full. But that the practice is capable of abuse, and is often greatly abused, is only too evident. Some of the abbreviations often used are entirely inexcusable, and, says Griffiths, "are productive of direful errors," especially when joined with the proverbially indistinct writing of most medical men. In order that these mistakes may be avoided, prescribers should make it a RULE *always to write out a word in full if there is a possible*

chance that the abbreviation may be misunderstood.

Prescriptions must be written as if for the stupidest and most ignorant of apothecaries' clerks.

The amount of extra time thus consumed is of very little consideration, when we think that perhaps the life of a human being depends upon it; to say nothing of the amount of time often lost in trying to make out what is meant, or in hunting up the writer for an explanation.

The truth is, improper abridgments owe their existence, as Gerrish very justly remarks, less frequently to lack of time than to ignorance, and are therefore all the more inexcusable.

The following list, abridged from Pereira, shows the ABBREVIATIONS WHICH SHOULD BE AVOIDED.

Acid. Hydroc.	{ Acidum Hydrochloricum, or Acidum Hydrocyanicum.
Aq. Fortis may be read aq. Fontis.	
Ext. Col.	{ Extractum Colchici, or Extractum Colocynthis.
Hydra. Chlor.	{ Hydras Chloralis, or Hydrargyri Chloridum.
Hydr. Bic.	{ Hydrargyrum Bichloridum, or Hydrargyrum Bicyanidum.
Sulph.	{ Sulphur. Sulphuretum, Sulphas,

but they

are very worth

instances where

scarcely all these

the proper ab-

and not *pill*; *gttae*

the accusative

the proper abbreviation

and not *grs.*, as the

and

tion, I will say a few

tion, every syllable is pro-

we follow the English method,

the same sounds as in

where *a*, *e*, *u*, and consonants,

e, *i*, and *y*, they are soft, *c*

and *g* like *j*. *c* before *æ* and *æ* is

pronounced hard, like *k*,

ken (*ken*), *mastike* (*mastike*), &c.

by habit rather than by any rule,

machcum. As to the accent,

to give the accent of each word

able, rather than to burden the

mind of the student with rules, which are never remembered when it is time to apply them. It may be well to remember, that in all words of two syllables the accent is always on the first. Attention is particularly asked to the pronunciation of the following words which are very commonly mispronounced—ace'tas, at'ropa bary'ta, bro'midum, cam'phora, chimaph'ila (*kima*), chlo'ridum, codei'na, coni'um, en'ema, hyoscy'amus, io'didum, ox'idum, podophyl'lum, radi'cis, ric'inus, sina'pis.

CHAPTER VI

THE FORMS FOR EXTEMPORANEOUS PRESCRIPTIONS, WITH EXAMPLES.

BESIDES the different official preparations, any of which may be prescribed separately, we are in the habit of combining, as has already been indicated, various drugs and preparations in order to get new or modified actions, or to get more pleasing and convenient forms.

To the principles of medicinal combinations a separate chapter is devoted; at present I only wish to indicate the different forms which these combinations may take, the drugs or preparations proper for each form, and the methods of writing prescriptions for them.

PILLS.

Pills are little rounded masses of semi-solid consistency, and are intended to be swallowed

whole. From the nature of things only certain substances can be made into the pill form. These are

1. Substances the dose of which is small, as the alkaloids.
2. Vegetable extracts and powders, resins, metallic salts, etc. We also use the pill form to administer
3. Drugs having a very bad taste.
4. Substances intended to act slowly.
5. Insoluble substances too heavy for suspension in fluids.

Certain substances cannot or should not be made into pills:

1. Substances whose dose is large.
2. Deliquescent or efflorescent salts (*the latter unless dried*).
3. The fixed oils, except croton; and volatile oils exceeding one-half a drop to each pill.
4. Those intended to act at once as emetics and stimulants.
5. Caustic substances, except in minute doses, well diluted and thoroughly mixed with the vehicle.

The choice of an excipient may sometimes be left to the apothecary; but, should such a course not be deemed advisable, we may choose such an one as is most suitable for the ingredients of the proposed pill. Some of those commonly used are VEGETABLE EXTRACTS. Certain ones do not require any excipient when ordered alone. They also make good excipients for powders. If too hard they can be moistened with alcohol or glycerine.

SYRUP AND HONEY are used as excipients for powders. Sugar reduces calomel and should not be combined with it if the pills are to be kept any length of time.

Confection of Rose is suitable for powders, but contains tannin.

Soap is well adapted for fatty substances and for resinous bodies. It should not be used with substances which are decomposed by an alkali, nor with tartar emetic.

Glycerine with Gum Tragacanth and the *Glycerite of Starch* are very valuable excipients, as the pills made with them never get hard and insoluble.

Alcohol is valuable to soften camphor, Ex. Colocynth Comp., vegetable extracts, etc.

Volatile oils and Mucilage are very poor excipients. The pills made with them soon dry and become very hard.

Dry Powders are combined with oils and other moist substances to give them the proper consistency, and are also put around pills to keep them from sticking together. The principal powders used for this purpose are powdered liquorice root, starch, etc.

The *Mineral acids* will make the Sulphate of Quinine into a pill mass if added slowly.

A *Crumb of bread* makes a good excipient for croton oil.

Copaiba should not be prescribed in pill form.

Chloral and Camphor liquefy when mixed.

Nitrate of Silver can be made into pills with gum arabic; if combined with the vegetable extracts or glucose it is likely to explode.

The Official Pills may be ordered simply by name. If, for example, we desire to order some compound rhubarb pills, which are official, and are therefore supposed to be found ready

prepared in every shop, we first set down the sign for *Recipe*, then the name of the pills, and in the same line the number to be dispensed. According to rule 3, page 49, the name of the medicine is here put in the accusative and not in the genitive; for, there being no noun expressing weight or measure to stand as object to *Recipe*, the name of the medicine takes its place. *Rhei* remains in the genitive, being governed by *Pilulas*. Below this must be put the directions to the patient, there being no further directions to the apothecary necessary, the writer's name and address, and date. The name of the patient may also be added, as follows:

R. Pilulas Rhei Compositas sexdecim.

Signa. Take one pill each evening.

For Mr. Eger. James Medicus, M.D.

15th Feby., 1877.

100 Broadway.

There are in the prescription thus written a number of words which might be safely and conveniently abbreviated or expressed by their appropriate symbols. Thus abbreviated it would read:

℞. Pil. Rhei Comp. xvi.

Sig. Take one pill each evening.

For Mr. Eger. J. Medicus, M.D.,

15, 2, 77.

100 Broadway.

In case we wish to order pills to be made of one of the masses, the mode of writing is somewhat different. As we must indicate the amount of the mass required, *massa* is put in the genitive case. We must also direct the dispenser to divide it into a certain number of pills. Written out in full the prescription would read as follows:

℞. Massæ Ferri Carbonatis drachmam.

Divide in pilulas quindecim.

Sig. Two pills after each meal.

Name, etc.

In the directions to the druggist, *divide* is in the imperative mood, and *pilulas* is the accusative, governed by *in*.

Now, suppose that we desire to order some pills, each one to contain one-half a grain of the extract of nux vomica, one grain of powdered scammony, and three-quarters of a grain, each, of powdered aloes and rhubarb. The first step

as before is to set down the sign **R**, and then the names of the medicines expressed in Latin and in the genitive case, allowing a line for each. In order that these substances may be conveniently made into a pill-mass, there must be something to give them sufficient cohesion. This, the extract of nux vomica will do, providing it is softened; and this can be accomplished by the addition of a little alcohol. We add alcohol then to the list. We must next decide how many pills we desire to have made; having done this, we set it down at once in the form of an order, to divide the whole into so many pills, let us say 12. This direction must be preceded by the word *misce* or "mix."

To obtain the amount of each ingredient required we must multiply the dose we desire to give by 12, the number of pills or doses; this gives us respectively 6 ($12 \times \frac{1}{2}$), 12 (12×1), and 9 ($12 \times \frac{3}{4}$) grains, which must be set down each on its proper line, the words expressing it being put in the accusative case. As equal amounts of aloes and rhubarb are required,

we may save time and trouble by using the word *ana* (of each) opposite the latter and then write the quantity but once. As the amount of alcohol required depends on circumstances, we may safely leave it to the judgment of the apothecary, and indicate it by the use of the expression *quantum sufficiat*, which also governs the genitive. Having done this, the directions to the apothecary being already down, we have but to add the directions to the patient; this, of course, being preceded by the word *signa*, the names, date, etc., and the prescription is complete, as follows:

R. Extracti Nucis Vomicae, grana sex.
Pulveris Scammonii, grana duodecim.
Pulveris Aloes.
Pulveris Rhei, ana grana novem.
Alcoholis, quantum sufficiat.
Misce et fiat massa in pilulas duodecim dividenda.
Signa. One pill to be taken at night.
Signature, . etc.

Written with abbreviations and symbols, it would read:

R. Ext. Nuc. Vom.	gr. vi.
Pulv. Scammon.	gr. xii.
“ Aloes.	
“ Rhei, aa	gr. ix.
Alcohol,	q. s.
M. et ft. mas. in pil. xii., dividen.	
Sig. One pill, etc.	

Either the form for the directions to the apothecary here given, “Mix and make a mass to be divided into 12 pills,” or the one given above, or one of several others, may be used.

There is still another way in which this prescription may be written. Place only the amount required for one pill opposite each ingredient and then direct the apothecary to make twelve such pills, thus:

R. Ext. Nucis Vomicae, grani semissem (gr. ss.).
Pulv. Scammonii, granum (gr. i.).
“ Aloes.
“ Rhei, ana grani tres quartas partes (gr. $\frac{3}{4}$).
Alcoholis, quantum sufficiat.
M. Fac pilulas tales duodecim.
Sig. As before.

In this way we direct the compounder to compute the amount of each ingredient required for the 12 pills from the dose given for one, thus throwing upon him an additional responsibility and leaving chances for mistakes which might just as well be avoided. This method is not, therefore, to be recommended. It has, however, one advantage which should cause its adoption by all medical authors, viz.: that of allowing the reader to see at a glance, without being obliged to go through an often tedious preliminary calculation, the amount of each ingredient in a dose. In order to cover the taste it is customary to coat pills with certain substances, such as a gelatine or sugar. This cannot be done in the case of extemporaneous formulæ, as it would take too long. Pills can, however, be readily and easily coated with silver- or gold-foil, which answers the same purpose. In order to have this done we must write after the directions to the druggist the words "*Deaurentur pilulæ.*" Pills may also be covered with fine tissue paper or wafer paper. Perhaps the best way is to direct that the pills shall be placed in gelatine

capsules. In that case we substitute *capsula* for *pilula*, and write:

M. Et divide in capsulas duodecim.

MIXTURES.

Mixtures are compounds in which fluid preparations are mixed, or in which solid substances are dissolved or held in suspension by an appropriate vehicle. They are for internal administration in divided doses.

Substances suitable for use in a mixture are all fluid preparations; all salts which are soluble in water either alone or by the aid of some other substance (quinine by an acid); those salts which can be diffused by agitation, also substances which are miscible by trituration and such as can be suspended by the aid of viscid excipients. Of course the relations of the drugs to each other must be carefully studied so as to avoid mixing substances which are incompatible (see Chap. X.). Mixtures should be of a proper consistency. One fluidounce should hold 3 iss. of a vegetable powder and ℥i. of an extract. The vehicles for a mixture are syrups and

glycerine generally diluted, water medicated or simple, infusions and decoctions, and mucilage. In order to disguise the taste we may add various agents having strong and pleasant flavors, such as the tinctures and spirits of the aromatics, various syrups, or some of the essential oils. In case the oils are added they must be mixed with syrup or glycerine or rubbed up with sugar.

Emulsions are mixtures formed by the minute subdivision and suspension of an oil or a resinous substance in water by the aid of some excipient. For making an emulsion of a resin we use a gum; with a gum-resin water alone is necessary. For an oil we use either mucilage of Acacia, mucilage of Tragacanth, yolk of egg, or Liquor Potassæ, or some other strong alkali. The acacia and egg are those most commonly used. An emulsion made with egg will not keep long. The amount of mucilage to be used varies with the oil. With castor oil one part of mucilage to four of oil is enough; with the volatile oils more mucilage is required. Soluble salts should not be added to emulsions

The following is the formula for the well-known "Imperial Drink:"

- R. Potassii Bitartratis, drachmas duas.
Olei Limonis, minima quinque.
Aquæ Bullientis, q. s. ad uncias viginti.
M. Fiat Potus.

POWDERS.

In this form we can prescribe vegetable powders or such vegetable drugs as can be powdered, certain salts, acids, metals, most alkaloids, and glucosides, and certain extracts. The substances which are not suited to this mode of administration are deliquescent salts and very volatile substances, and those which liquefy when mixed, as chloral and camphor, or Acetate of Lead and Sulphate of Zinc. Chlorate of Potassium will explode when rubbed in a mortar with sugar, tannic acid or similar substances. If the substance is active, or the dose small, some inert powder should be added to give it bulk enough to enable it to be easily handled. Such powders are sugar of milk, powdered white sugar, powdered liquorice, aromatic powder, powdered acacia, etc. Some substances cannot

be easily powdered without the addition of some other body. Opium requires a hard substance like the sugar of milk, camphor requires a little alcohol, myrrh needs sugar or gum, etc.

The following salts are deliquescent:

Ammonii Nitras.	Potassa.
Calcii Chloridum.	Potassii Acetas
Lithii Citras.	" Carbonas.
Zinci Chloridum.	" Citras.

Powders are prescribed in two ways; either the powder is ordered to be dispensed in bulk and a certain quantity directed to be taken at a dose; or it is ordered to be divided into a certain number of doses, each to be contained in a separate paper (*chartula*).

An official powder, Dover's powder for example, is thus ordered:

R. Pulveris Ipecacuanhæ et Opii drachmam.

Divide in chartulas (*vel* capsulas), duodecim.

Sig. One to be taken at night and repeated if required.

The following is the formula for the compound liquorice powder (powder of Glycyrrhiza):

- R. Pulveris Sennæ,
 " Glycyrrhizæ, ana uncias duas.
 Olei Fœniculi.
 Sulphuris Loti, ana unciam.
 Pulveris Sacchari Albi, uncias sex.
 Misce, et pulve bene.
 Sig. Dose, one teaspoonful.

The Pulvis Effervescens Comp. is already divided into powders or papers containing a certain amount, and they are to be ordered simply by specifying the number wanted.

CONFECTIONS AND ELECTUARIES.

These preparations are very little used at present. They consist of medicinal powders beaten up to the consistency of a thick paste, with sugar, honey, or molasses. There is nothing special about the method of prescribing them. The following will serve as an example. It is the famous "Chelsea Pensioner."

- M. Sulphuris Loti, uncias duas.
 Potassii Bitartratis, unciam.
 Pulveris Rhei, drachmas duas.
 Guaiaci Resinæ, drachmam.
 Mellis Depurati, libra.
 Myristicam pulverizatam, unam

M. Fiat Electuarium.

Sig. Dose, one tablespoonful night and morning.

TROCHES.

These are very seldom ordered to be made up according to extemporaneous formulæ. There are a number official, and besides there are a great many in the market, made according to certain well-known formulæ, or according to private receipts.

TABLETS.

A number of firms now manufacture a great variety of tables, of which there are three classes:

1st. Tablet triturates, prepared by triturating the medicinal substances thoroughly, usually with sugar of milk, and then forming into tablets with as little gummy excipient as possible.

2d. Tablets for hypodermic use.

3d. Compressed tablets of salts and various medicinal combinations.

They furnish to the physician and pharmacist a very large number of combinations in convenient form for keeping and for ready administration.

GARGLES.

Gargles are liquid preparations for application by the patient to the back part of the mouth or pharynx. They should not contain any very powerful drug, which, if swallowed, might do harm, neither should they have a too powerful local action, or contain agents which are likely to injure the teeth. The mode of writing for them does not differ at all from that of writing for a mixture, only the dose is not considered, but rather the percentage of the active ingredients. Example:

Acidi Tannici, drachmas duas.

Potassii Chloratis, drachmam.

Glycerini, unciam.

Aquæ, uncias septem.

M.

Sig. Use as a gargle every two hours.

VAPORS AND INHALATIONS.

These are medicines reduced either to the form of a very fine spray, or to a vapor or gas, and are to be inhaled or thrown into the mouth, in order that they may act upon the mucous membrane of the respiratory tract. Special

apparatuses are required for some forms of inhalation. There is nothing peculiar about the prescriptions for them.

R. Olei Cubebæ, drachmas duas.

Magnesii Carbonatis, drachmam.

Aquæ, uncias tres.

Misce.

Sig. A teaspoonful in a pint of water at 150° F. for each inhalation.*

INJECTIONS.

Injections are fluid preparations intended to be thrown into one of the cavities of the body by a syringe. The strength of an injection varies very much with the cavity for which it is intended. The nasal cavity, the male urethra and the bladder are very susceptible, while the mouth, vagina, and ear will bear much stronger applications.

An injection which is intended to be thrown into the rectum is called an *en'ema*, *clyster* or *lavement*.

Enemas are used for a number of different purposes:

* Use—"A most valuable stimulant, especially in laryngorrhœa."

1. To get a local effect on the rectal mucous membrane.
2. To excite the peristaltic action of the intestines and an expulsion of their contents.
3. To dissolve impacted fæces.
4. To mechanically distend the bowel.
5. To remove parasites.
6. To obtain the absorption of a medicine.
7. To afford nourishment to the system.

Most enemas are made up by the attendant at the time of giving. We may be called upon sometimes to write prescriptions for enemas to accomplish the objects mentioned under the headings 1, 4, 5 and 6.

For local effects.—To accomplish this object we may use simple ice water, or a solution of any of the astringent salts or acids, such as we would use for a similar purpose elsewhere.

The amount to be injected at one time should not be more than a few ounces. The strength must be governed by circumstances, but as a rule the rectum is very susceptible and a solution of the metallic salts should be weak.

To affect the system.—For this purpose we may

use some of the alkaloids in solution, or a vegetable extract, or almost any fluid preparation, provided it is not too irritating.

The injection should not be more than an ounce, and should be warmed to 100° F. If the article is very irritating it may be made less so by mixing it with boiled starch. The dose of most medicines given by the rectum is larger than when given by the stomach.

To excite the peristaltic motion.—This is the object for which injections are most frequently used. We use some irritating substances, together with a considerable bulk of water, or even water alone. In this case the injection is cold or only tepid. The substances most used are soap and salt, molasses, turpentine, castor oil, or something of a like nature. The amount of the whole injection for an adult varies from a pint to a quart or more. For a baby under six months, use one ounce; at a year, two ounces, and increase about one-half an ounce for each year.

To remove parasites.—First, cleanse out the lower bowel with an enema of the last class, and then inject the parasiticide: e. g., Fluidextract

of Quassia diluted with warm water to the amount of one to two ounces, and direct it to be retained as long as possible.

Examples:

1.—℞. Bismuthi Subcarbonatis, unciam.

Extracti Opii, grana duo.

Glycerinæ.

Aquæ, ana uncias duas.

M. Fiat Enema.

Sig. Two tablespoonfuls to be injected three times a week.

2.—℞. Quininæ Hydrobromatis, grana decem.

Alcoholis, minima octo.

Mucilaginis Amyli, drachmas duas.

Aquæ, q. s. ad, semiunciam.

M. Et Fiat Enema.

Sig. The whole to be injected at once.

3.—℞. Olei Terebinthinæ, uncia semissem.

Olei Ricini, unciam cum semisse.

Ovum, unum.

Decocti Hordei, *vel* Aquæ Fervidæ,
uncias quatuordecim.

M. Fiat Enema.

Sig. The whole to be slowly injected into the bowel.

4.—B. Fluidextracti Quassiae unciam.

Aquæ, uncias duas.

Misce.

Sig. One tablespoonful with a tablespoonful of hot water, to be injected while warm.

SUPPOSITORIES.

We usually order suppositories to be made according to an extemporaneous formula. The basis is almost always cacao-butter. The active ingredients are usually extracts or alkaloids; a few metallic salts and other crystalline bodies and some powders being occasionally used. They are usually made for introduction into the rectum. They may also be used in the vagina (called pessaries), uterus, urethra, and Eustachian tube. Those intended for the last three canals named are called *bougies*. Suppositories for the adult rectum should contain 15–30 grs. of cacao-butter; and for children less in proportion. For the vagina a drachm of cacao-butter may be used. An excipient for vaginal suppositories has been proposed, consisting of gelatine and glycerine, as being more soluble than cacao-butter. For the uterus and urethra

cacao-butter is used, and instead of the conical form they are made cylindrical, about 2 inches long and the size of a No. 9 catheter, and weigh 12-15 grains.

- R. Extracti Opii, grana quinque.
Plumbi Acetatis, grana duodecim.
Olei Theobromæ, quantum sufficiat.
M. Fiant Suppositoria decem.

Sig. One to be introduced into the bowel every three hours.

- R. Extracti Hydrastis, grana decem.
Zinci Sulphatis, grana dua cum semisse.
Olei Theobromæ, drachmæ semissem.
M. Divide in Bougias decem.

Sig. One to be introduced night and morning.

LOTIONS, WASHES, AND FOMENTATIONS.

Lotions or washes are solutions, or mixtures of medicinal agents, for external application. They do not differ, in the mode of prescribing them, from injections. The name *collutorium* is sometimes applied to washes for the mouth. *Fotus* is a fomentation or hot application. *Collyria* are washes or lotions for the eye. They

are simple solutions of agents having astringent or emollient action. The term collyrium formerly had a very different meaning. An attempt has been made of late to revive the old usage and to apply the term to all solutions for local application.

Lead and Opium Wash.

R. Plumbi Acetatis.

Tincturæ Opii, ana unciam.

Aquam, ad Octarium.

M. Fiat Lotio.

Sig. For external use only. Keep the parts wet with the lotion.

R. Zinci Sulphatis, grana tria.

Aluminis, grana sex.

Aquæ Rosæ, uncias duas.

M. Fac Collyrium.

Sig. Drop three drops into the eye twice daily.

BATHS (*Balnea*).

Medicated baths are sometimes very valuable agents in the treatment of disease. Of course only the active agents are ordered of the apothecary. They are used in general diseases and

also in diseases of the skin. The following is an example:

R. Acidi Nitrici, uncias undecim.

Acidi Hydrochlorici, uncias viginti.

Misce et signa. To be added to 30 gallons of hot water, in a wooden tub, and used as a bath.

PAPERS.

Medicated papers are prepared either by immersing unsized paper in the medicinal liquid to saturation or by spreading the prepared liquid upon well-sized paper by means of a brush. The former method is employed in preparing papers for testing or for fumigation, the latter for external use.

POULTICES.

Poultices or cataplasms are seldom or never ordered from the apothecary. The ingredients are mixed by the attendants, and the poultice applied while hot.

PLASTERS.

Medicinal compounds of a sticky nature which are spread on cloth, leather or sometimes paper, for application to the skin. As they are difficult

of preparation, extemporaneous formulæ for their manufacture are not often used. The official plasters are employed, or a cerate is ordered to be spread like a plaster. There is no "*emplastrum vesicatorium*" or "*emplastrum cantharidis*" official in the U. S. Ph., so that in ordering a blister, direct the cerate of cantharides to be spread on adhesive plaster. Plasters are ordered by the square inch, or according to model "*ad exemplar*," thus:

R. Emplastrum Belladonnæ, 2" × 3".

Sig. Apply over the painful spot.

R. Cerati Extracti Cantharidis, q. s.

Extende Supra Emplastrum Resinæ, 3" × 3".

Vel. Fiat Emplastrum, 3" × 3".

Sig. The blister; leave it on for seven hours.

OINTMENTS AND CERATES.

Extemporaneous formulæ for these preparations are very frequent. The basis is either the official *ceratum* or *unguentum*, or, in the case of ointments, petrolatum, the glycerite of starch, lard, etc., may be used. As an example the following Compound Belladonna Ointment of the N. Y. Dispensary will answer :

- R.** Extracti Belladonnæ.
Plumbi Acetatis, ana unciam.
Acidi Tannici, uncias duas.
Adipis, uncias octo.
M. Fiat Unguentum.
Sig. For external use.

PAINTS (*Pigmenta*).

Under this name certain preparations for external use have been made which do not seem to come under any other heading. They are such as the following:

- R.** Saponis Viridis.
Olei Cadini.
Alcoholis, ana unciam.
M. Fiat Pigmentum.
Sig. For external use (in skin diseases).
R. Olei Tiglii, drachmam.
Ætheris Fortioris, drachmas duas.
Tincturæ Iodi, drachmas quinque.
Miscé.
Sig. Paint on every third night. "Poison."

LINIMENTS.

Fluid preparations for external application, having soap or some fatty substance as a basis.

They are applied by friction. They may be simple mixtures of fluids without any fat or soap.

R. Fluidextracti Belladonnæ, semiunciam.

Tincturæ Aconiti.

Chloroformi Venalis, ana drachmas duas.

Spiritus Camphoræ, unciam.

Alcoholis Diluti, ad unciam octo.

M. Fiat Linimentum.

Sig. "Poison." To be rubbed on the painful parts.

There are other names which are applied to certain preparations besides those given.

A *Linctus* or *Eclectos* is a medicine of a thick syrupy consistency, chiefly used to allay cough, and consisting of pectoral remedies. They were originally eaten from a stick. *Sparadrapum* is another name for plaster. *Taffetas* are very thin plasters spread on silk or paper.

GENERAL REMARKS.—We have now considered the various forms which prescriptions may take, and the rules for writing them correctly. The collection and repetition of a few of the recommendations which have been made here and there may not be amiss.

Abbreviations.—Never use any abbreviations which can in any way be taken for anything but the thing meant.

Chirography.—The handwriting of physicians is proverbially bad. The fact that mistakes do not more often happen, derived from this source, is due largely to the great care exercised by the apothecaries. No man should put himself or his patients at their mercy in this respect.

Quantity.—Many practitioners make the great mistake of ordering too much or too little. I do not refer to "shot-gun prescriptions," but to the practice of ordering four ounces when one would do; or again, of ordering two ounces when the patient is expected to use the medicine continually for a month or more. The exercise of a little more judgment in this respect would often be of great advantage to the pockets of patients, and neglect of it often calls forth severe criticism, and sometimes even charges of collusion.

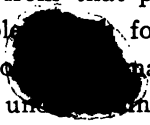

Directions to the Patient should always be written out with minutest care. If given verbally they may be quickly forgotten, or

where two prescriptions are given at once the directions may be confounded. If written down for the patient at home and not on the prescription, the druggist has no data by which to judge of the correctness of the doses ordered.

Revision.—Never let a prescription go out of your hands without carefully going over it and making sure that each word is legible, and that the quantities and doses are correct. It is well, if possible, to let a short interval and a little conversation intervene between the original composition and the revision.

Prescription papers.—It is very convenient always to carry pieces of paper of the proper size on which to write prescriptions. Great inconvenience is often experienced from neglect of this precaution. The name, address, and the sign *R.* may be printed on, as the fancy may dictate. Many druggists furnish blanks for prescriptions, each one with his own advertisement. It is certainly in better taste not to become the medium of advertising any particular druggist. We may each have our preference, and for good reasons; but a verbal recommen-

world. It must be confessed that a certain maturity of mind and boldness of action are requisite to escape from the slavery of posological entities or essences, and to allow the apparent exigencies of the case before us to be our sole guide. That constitutional bashfulness which is called 'caution,' which habitually delights in small ways, and which is half afraid of the instrument it uses, should practice other arts than the art of medicine. A wise courage is the physician's watchword."

It must be carefully borne in mind that the action of a medicine varies very much with the dose. Small doses often have nearly opposite effects from that produced by large ones. In the table  follow an attempt has been made to  maximum and minimum doses proper under ordinary circumstances. It will at once be seen that circumstances may and will arise where much larger or smaller doses than those here given can be employed with safety and with good results.

Many rules have been given for deducting the doses proper for the different ages. All

such rules can give, of course, only an approximate result; as the same factors, such as idiosyncrasy, special diseases, which change the doses in adults, and many others even, may be active in the case of a child.

GABIUS' METHOD is the oldest, but is a purely arbitrary statement of the fractional part of the unit suited for each age.

YOUNG'S METHOD is more easily remembered. It is to add 12 to the age and divide the age by the result. This is simple and sufficiently accurate. For 2 years $= \frac{2}{2+12} = \frac{1}{7}$

Dr. R. O. COWLING has given a very good rule. According to this, the dose for a child is obtained by dividing the number of the following birthday by 24. For example, at 2 years $= \frac{2}{24} = \frac{1}{12}$

Dr. E. H. CLARK, of Boston, proposed a rule which, although quite accurate, is not very practical. According to this rule the proper dose is in proportion to the weight of the individual. Assuming 150 lbs. as the average weight for which the dose is 1, then the proper dose will be in the same proportion to 1 as the patient's weight to 150. So, if we divide the

weight by 150 we shall get a fraction representing the proper part of one for the dose in this case. If the patient weigh 100 lbs., his dose is $\frac{2}{3}$, or $150 \div 100$. For a baby of 10 lbs. = $\frac{1}{15}$, etc. Of these rules Dr. Cowling's seems the easiest and is quite accurate enough.

TABLE OF DOSES.

This table contains the doses of all the substances of the U. S. Pharmacopœia, as far as is practicable. Besides the doses, the definition of the drug is given, taken from the Pharmacopœia, and also the proper accentuation, taken from the same source. Such new and non-official drugs as seem to be valuable have been added to the list. The dose is given in both the old and metric systems, the doses in the latter not being the exact equivalents of the others, but rather the most convenient approximations. In the case of suppositories, ointments, etc., the strength is given, and either the amount of the active agent in an ounce, or the proportion which the active agent and the vehicle bear to each other, etc. Unofficial drugs are marked with *. If the drug is used in a pure state, the

proper dose is given, the name being put in the genitive case, and the form in which it is to be used is indicated when necessary. The doses of fluids must be understood to be in fluid measure. The sign "f" for fluidounce, etc., has been left off for the sake of clearness. The letters "Ph. p." after a substance mean that it is used only for Pharmaceutical purposes, to make other preparations. In the case of fluids grams may be changed to cubic centimeters in this table without materially changing the dose.

A

Aca'cia.—GUM ARABIC. *A gummy exudation from Acacia Senegal.*

Aca'ciæ, in powder,	} used as vehicles.
Mucilago Acaciæ,	
Syrupus Acacia,	

Acetanilidum.—ACETANILIDE. *An acetyl derivative of analine.*

Acetanilidi,	gr. i—viii, grm. .06—.50
Pulvis Acetanilidi Compositus	
	gr. i—viii, .06—.50

Acetonum.—ACETONE. *A liquid containing 99 per cent. by weight of absolute acetone (Dimethyl Ketone).*

Acetphenetidinum.—ACETPHENETIDINUM (Phenacetin).
A Phenol Derivative gr. ii—x. grm. .12—.60

A'cidum Ace'ticum.—ACETIC ACID. 36 per cent.

A'cidi Ace'tici, caustic.

A'cidum Ace'ticum Dilu'tum, 3 i—ii, grm. 4.—8.

A'cidum Ace'ticum Glacia'le, caustic.

Pulvis Acetanilidi Compositus

gr. i.—viii. grm. .06—.50

A'cidum Benzo'icum.—BENZOIC ACID. *An organic acid usually obtained from Benzoin by sublimation.*

A'cidi Benzo'ici, gr. v.—xv, grm. .30—1.

A'cidum Bo'ricum.—BORIC ACID. BORACIC ACID.

A'cidi Bo'rici, gr. v—xx grm. .30—1.30

Unguen'tum A'cidi Bo'rici.

A'cidum Camphor'icum—CAMPHORIC ACID. A dibasic organic acid. gr. xv—xxx, grm. 1.—2.

A'cidum Carbolicum.—See PHENOL.

A'cidum Chro'micum.—CHROMIC ACID. *External use as caustic.*

A'cidum Ci'tricum.—CITRIC ACID. *Usually prepared from lemon juice.*

A'cidi Ci'trici, gr. v—3 ss, grm. .30—2.

Syrupus Acidi Citrici 3 i—iv, 4.—15.

A'cidum Gal'licum.—GALLIC ACID. *Usually prepared from tannic acid.*

A'cidi Gal'lici, gr. v—xx, grm. .30—1.30

A'cidum Hydrobro'micum Dilu'tum.—DILUTED HYDROBROMIC ACID. A 10 per cent. solution.

A'cidi Hydrobro'mici Dilu'ti,

℥ xxx—3 i, grm. 2.—4.

A'cidum Hydrochlor'icum.—HYDROCHLORIC ACID. 31.9 per cent.

A'cidum Hydrochlor'icum Dilu'tum,†

℥ viii—xv, grm. .50—1.

A'cidum Hydrocyan'icum Dilu'tum.—DILUTED HYDROCYANIC ACID. PRUSSIC ACID. 2 per cent.

A'cidi Hydrocyan'ici Dilu'ti

℥ i—iii, grm. .06—.20

A'cidum Hydriod'icum Dilu'tum.—DILUTE HYDRIODIC ACID. 10 per cent. absolute acid.

℥ v—xv, grm. .30—1.

A'cidum Hypophosphoro'sum. — HYPOPHOSPHOROUS ACID. 30 per cent. ℥ iii.—xx. grm. .20—1.30

A'cidi Hypophosphoro'si Dilu'ti, 10 per cent.

℥ x—lx, grm. .60—4.

A'cidum Lac'ticum.—LACTIC ACID. 75 per cent.

A'cidi Lac'tici, ℥ xv—3 i, grm. 1.—4.

A'cidum Ni'tricum.—NITRIC ACID, *of the sp.* gr. 1.414. 68 per cent.

A'cidum Ni'tricum Dilu'tum

℥ xv—xlv, grm. 1.—3.

A'cidum Nitrohydrochlor'icum.—NITRO-HYDROCHLORIC ACID. *Nitric and hydrochloric acids mixed,* 18 to 82.

A'cidum Nitrohydrochlor'icum Dilu'tum.

℥ x—3 ss, grm. .60—2.

† The strong mineral acids should rarely be prescribed.
Use only the dilute acids.

A'cidum Ole'icum.—OLEIC ACID. *Sp. gr.* .900

A'cidi Ole'ici. Used to form the oleates.

A'cidum Phosphor'icum.—PHOSPHORIC ACID. 85 per cent. *Sp. gr.* 1.710.

Acidum Phosphoricum Dilutum,

℥ xv—3 i, grm. 1.—3.75

A'cidum Salicyl'icum.—SALICYLIC ACID.

A'cidi Salicyl'ici, gr. v—xv, grm. .30—1.

Lith'ii Salicyl'as, gr. i—viii, .06—.50

So'dii Salicyl'as, gr. v—3 ss, .30—2.

A'cidum Stear'icum.—STEARIC ACID. Used for Ph. p.

A'cidum Sulphu'ricum.—SULPHURIC ACID. *Oil of vitriol.*

Sulphuric acid of sp. gr. 1.835. 92.5 per cent.

Acidum Sulphuricum Dilutum,

℥ v—xx, grm. .30—1.20

Acidum Sulphuricum Aromaticum,

℥ v—x, .30—.60

A'cidum Sulphuro'sum.—SULPHUROUS ACID. *Sp. gr.*

1.022. 6.4 per cent.

A'cidi Sulphuro'si, ℥ x—3 ii, grm. .60—8.

So'dii Bisul'phis, gr. viii—3 ss, .50—2.

Sodii Hyposul'phis, gr. v—xx, .30—1.30

Sodii Sulphis, gr. xv—3 i, 1.—4.

A'cidum Tan'nicum.—TANNIC ACID. *Tannin.*

A'cidi Tan'nici, gr. i—xx, grm. .06—1.30

Glyceri'tum Acidi Tannici. 20 per cent.

Trochis'ci Acidi Tannici, *ad libitum.*

Unguentum Acidi Tannici, 20 per cent.

A'cidum Tartar'icum.†—TARTARIC ACID.

A'cidi Tartar'ici, gr. x—xxx, grm. .60—2.

A'cidum Trichloraceticum.—TRICHLORACETIC ACID.

Prepared by the oxidation of hydrated chloral with nitric acid. External use.

Aconi'tum—ACONITE. *The root of Aconitum napellus.*

Fluidextrac'tum Aconiti ℥½—ii, cc. .03—.12

Tinctu'ra Aconiti, ℥ v—x, .30—.60

Aconita'na.—ACONITINE. *An alkaloid obtained from Aconite.* gr. ⅙—⅙ grm. .00015—.0002.

Ad'eps La'nae.—WOOL FAT. *The purified fat of the wool of sheep, free from water. For external use.*

Ad'eps La'nae Hydro'sus.—Containing 30 per cent. of water.

Ad'eps.—LARD. *Axungia. Prepared fat of Sus scrofa.*

Ad'eps Benzoina'tus,	} Ph. p.
O'leum A'dipis,	

Unguen'tum, lard 4, yellow wax 1.

Cera'tum, lard 7, white wax 3.

Ceratum Res'inæ.

Æ'ther.—ETHER. Sulphuric Ether. 96 per cent.

Æ'theris. Inhaled.

Spir'itus Æ'theris, 3 i—iv, grm. 3.50—14.

Spiritus Ætheris Comp. 3 ss—ii, 1.70—7.

Æ'ther Ace'ticus.—ACETIC ETHER.

3 ss—i, 1.70—3.50

† For other acids see drugs from which they are derived.

Spt. Æ'theris Nitro'si.—SPIRIT OF NITROUS ETHER.

Sweet spirit of nitre. ʒss—iv, grm. 1.70—14.

Al'cohol.—SPIRIT. *Rectified spirit of wine. Spirits of*
sp. gr. of .820. 91 per cent. by weight, 94 per
cent. by volume.

Alcohol'is. No dose assignable.

Al'cohol Absolu'tum. Should contain not less than
99 per cent. of alcohol.

Al'cohol Dilu'tum. Equal parts alcohol and water.
Sp. gr. .91136.

Spir'itus Frumen'ti. Whiskey, 44—50 per cent. by
weight, 50—58 per cent. by volume, of alcohol.

Spiritus Vi'ni Gal'lici. Brandy, 39—47 per cent. by
weight, 46—55 per cent. by volume, of alcohol.

Vinum Album. White wine, 10—14 per cent. alcohol.

Vinum Rubrum. Red wine, 10—14 per cent. al-
cohol.

Al'oë.—ALOES. *The inspissated juice of the leaves of*
Aloë Perryi and Aloë vera and others.

Aloë Purifica'ta, gr. ½—x, grm. .03—.60

Extractum Aloës, gr. ½—vi, .03—.36

Pil'ulæ Aloës. Aloes and soap ʒā 2 grs. in each pill.

Pilulæ Aloës et Ferri. Aloes and Sulphate of Iron ʒā
1 gr. in each pill.†

Pilulæ Aloës et Mastiches (*Lady Webster's*). Aloes 2
grs. mastic and rose ʒā ½ gr. in each pill.†

† These quantities are approximate only.

Pilulæ Aloes et Myr'rhæ. Aloes 2 grs., myrrh 1 gr.,
and aromatic powder $\frac{1}{2}$ gr. in each pill.†

Pilulæ Laxative Compositæ.

Tinctura Aloes, ℥ viii—3 iv, grm. .50—13.50

Tinctura Aloes et Myr'rhæ, 3 ss—ii, grm. 2.—7.50

Aloi'num.—ALOIN. *A neutral principle obtained from Aloes.*

Aloini, gr. $\frac{1}{2}$ —ii, grm. .03—.12

Althæ'a.—MARSHMALLOW. *Root of Althæa officinalis.*

Syrupus Althæ'æ. *Demulcent.*

Alu'men.—ALUM. *Potassa Alum. Sulphate of Aluminium and Potassium.*

Alu'minis, gr. v—xlv, grm. .30—3.

Alumen Exsicca'tum. *External use.*

* **Alumin'um.**—ALUMINIUM. *The metal Aluminum.*

Alumini Hydroxidum, gr. iii—xxv, grm. .20—1.60

Alumini Sulphas. *External use.*

Ferric Alum. *See under Ferrum.*

* **Ammo'nia.**—*A gas with the formula N H₃.*

Aqua Ammo'niæ. 10 per cent. of gas.

℥ x—xx, grm. .60—1.20

Aqua Ammoniaë For'tior. 28 per cent. of gas. Ph. p.

Linimen'tum Ammoniaë. *External use.*

Spir'itus Ammoniaë, ℥ x—3 i, grm. .60—4.

Spiritus Ammoniaë Aroma'ticus,

3 ss—3 ii, 2.—8.

† These quantities are approximate only.

Li'quor Ammonii Aceta'tis,

	3 ii— $\frac{3}{4}$ i,	grm. 8.—30.
Ammo'nii Ben'zoas,	gr. x—xxx,	.60—2.
Ammonii Bro'midum,	gr. vii—xxx,	.50—2.
Ammonii Car'bonas,	gr. ii—x,	.12—.65
Ammonii Chlo'ridum,	gr. i—3 ss,	.06—2.
Trochis'ci Ammonii Chloridi,		

i = gr. iss. .10

Ammonii Io'didum,	gr. ii—x,	.12—.65
Ammonii Salicylas	gr. v—xx,	.3—1.30
Ammonii Valeras,	gr. ii—viii,	.12—.50

Amyg'dala Ama'ra.—BITTER ALMOND. *The seed of Prunus Amygdalus, variety Amara.*

A'qua Amyg'dalæ Ama'ræ,	$\frac{3}{4}$ ss,	grm. 15.
O'leum Amygdalæ Amaræ,	\mathfrak{M} $\frac{1}{2}$ — $\frac{1}{4}$,	.01—.03
Spir'itus Amygdalæ,	\mathfrak{M} x—1,	.60—3.

Amyg'dala Dulcis.—SWEET ALMOND. *The seed of Prunus Amygdalus, variety Dulcis.*

Emul'sum Amygdalæ. *As vehicle.*

Syrupus Amygdalæ,	3 i— $\frac{3}{4}$ i,	grm. 5.—40.
O'leum Amygdalæ Expres'sum		
	3 i— $\frac{3}{4}$ ss,	3.50—14.

A'mylis Ni'tris.—NITRATE OF AMYL.

A'myl Nitri'tis,	$\left\{ \begin{array}{l} \text{gtt. i—v, inhalation.} \\ \mathfrak{M} \text{ i—iii, internally grm. .05—.15} \end{array} \right.$	
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Amy'lum.—STARCH. *The fecula of the seed of Zea Mays.*

Amyli (powdered),	$\left\{ \begin{array}{l} \text{External use.} \end{array} \right.$
Glyceri'tum Amyli,	

Ani'sum.—ANISE. *The fruit of Pimpinella Anisum.*

- Anisi, gr. x—xx, grm. .65—1.30
 A'qua Anisi, ℥ i—ii, 30.—60.
 O'leum Anisi, ℥ i—v, .05—.25
 Spir'itus Anisi, 3 i—ii, 4.—8.
- An'themis.**—CHAMOMILE. *The flowers of Anthemis nobilis.*
 Anthem'idis, 3 ss—ii, grm. 2.—8.
 * O'leum Anthemidis, ℥ v .25
- Antimo'nium.**—ANTIMONY. *The metal antimony.*
 Antimo'nii et Potas'sii Tar'tras, *Tartar-emetic.*
 gr. ʒ i—ii, grm. .005—.13
 Vi'num Antimonii (℥ i = grs. ii), ℥ v—3 i, .30—4.
 Syru'pus Scil'læ Compositus. 2 parts *Tartar Emet.*,
 in 1000.
- Antipyr'i'na.**—ANTIPYRINE. *Obtained by the condensation of phenylhydrazine with aceto-acetic ether, and methylation of the product.*
 gr. ii—x, grms. .12—.65
- Apo'cynum.**—CANADIAN HEMP. *The root of Apocynum Cannabinum*
 Apo'cyni, gr. v—xxx, grm. .30—2.
 Fluidextract'um Apo'cyni ℥ v—xxx, .30—2.
- Aq'ua.**—WATER. *Natural water in its purest attainable state*
 Aqua Destillata. *Distilled water.*
- Aq'ua Hydroge'nii Diox'idi.**—SOLUTION OF PEROXIDE OF HYDROGEN. For local use.
- Aquæ.**—WATERS OR MEDICATED WATERS. *When pre-*

*tained from oil of bitter almond or other oils,
also produced artificially.* ℥i—v, gms. .06—.30.

Benzoi'num.—BENZOIN. *A balsamic resin obtained
from Styrax Benzoin.*

Benzoi'ni,	Ph. p.	
Acidum Benzo'icum,	gr. x—xxx,	grm. .65—2.
Ammonii Ben'zoas,	gr. x—xx,	.65—1.30
Lith'ii Benzoas,	gr. v—xxx,	.30—2.
Sodii Benzoas,	gr. x—xx,	.65—1.30
Tinctura Benzoi'ni,	3 ss—i,	2.—4.
Tinctura Benzoini Composita,	3 ss—i,	2.—4.
Adeps Benzoinatus,	<i>External use.</i>	

Benzosulphin'idum.—BENZOSULPHINIDUM OR SACCHA-
RINE. *The anhydride of ortho-sulphamide-benzoic
acid.* gr. ½—iv, grm. .03—.25

Ber'beris.—BERBERIS. *The rhizome and roots of Berbe-
ris Aquifolium.*

Fluidextractum Berberidis ℥ xv—xxx, grm. 1.—2.

Betanaph'thol.—BETANAPHTHOL. *A phenol occurring
in coal tar but usually prepared from Naphtha-
lene. Antiseptic.* gr. ½—v grm. .03—.30.

Bismu'thum.—BISMUTH. *Commercial Bismuth of good
quality. Not used.*

Bismu'thi Citras (soluble),	gr. i—iii,	grm. .06—.20.
Bismuthi et Ammonii Citras,	gr. ii—iv,	.12—.25
Bismuthi Subcar'bonas,	gr. x—3 i,	.60—4.
Bismuthi Subgallas,	gr. iii—x,	.20—.60
Bismuthi Subni'tras,	gr. x—3 i,	.60—4.

Bismuthi Subsalicylas gr. v—x, grm. .30—.60
 Braye'ra.—See CUSO.

Bromofo'rum.—BROMOFORM. *A liquid consisting of 99 per cent. bromoform and one per cent. absolute alcohol.* ℥ v—x, grm. .30—.60

Bro'mum.—BROMINE. *A liquid non-metallic element obtained from sea-water.*

Bro'mi,	<i>External use.</i>	
Ammo'nii Bro'midum,	gr. v—xxx,	grm. .30—2.
Cal'cii Bromidum,	gr. xv—xxx,	1.—2.
Lith'ii Bromidum,	gr. x—xx,	.65—1.30
Potas'sii Bromidum	} gr. v—3 i,	.30—4.
So'dii Bromidum,		
Zin'ci Bromidum,	gr. ii—vi,	.12—.40
Cam'phora Monobroma'ta,		
	gr. iii—v,	.20—.30

Bu'chu.—BUCHU. *The leaves of Barosma betulina and Barosma crenulata.*

Bu'chu,	gr. xv—xxx,	grm. 1.—2.
Fluidextractum Buchu,	℥ xx—xl,	1.20—3.

Caffe'i'na—CAFFEINE. *A feebly basic principle, obtained from the dried leaves of Thea sinensis or from the dried seeds of Coffea arabica, and found also in other plants.*

Caffeinaæ,	gr. ii—iv,	grm. .12—.20
Caffeina Citrata,	gr. i—iii,	grm. .06—.20
Caffeina Citrata Effervescens,		
	3 ss—iii,	grm. 2.—12.

Cal'amus.—SWEET FLAG. *The rhizome of Acorus Calamus.*

Cal'ami, *ad libitum.*

Fluidextractum Calami, ℥ xv—3 i, grm. 1.—4.

* **Cal'cium.**—CALCIUM. *The metal Calcium.*

Calcii Bromidum, gr. xv—xxx, grm. 1.—2.

Carb. Lime.	{	Calcii Car'bonas Præcipita'tus, gr. v—3 i, .30—4.
		Creta Præparata, gr. x—3 i, .60—4.
		Pulvis Cretæ Compositus, gr. viii—3 i, .50—4.
		Mistura Cretæ, ʒ ss, 15.

Calcii Chloridum, gr. x—xx, .65—1.30

Calcii Hypophosphis, gr. iii—v, .20—30

Calcii Phos'phas Præcipita'tus,
gr. x—xxx, .60—2.

Calcii Sulphas Exsiccatus, *Plaster of Paris.*

Calx, *quick lime.* *Escharotic* and Ph. p.

Liquor Calcis, 3 ii—3 ii, 8.—60.

Linimentum Calcis, *Carron oil.* Liq. Calcis and
Oleum Lini, equal parts.

Calx Chlorinata, gr. iii—vi, grm. .20—.40

Calx Sulphura'ta, gr. ʒ—½, .006—.03

Syrupus Cal'cii Lactophospha'tis,
3 i—3 i, 4.—30.

Syrupus Calcis, ℥ xv—3 i, 1.—4.

Syrupus Hypophosphi'tum,
3 ii—3 i, 8.—30.

Syrupus Hypophosphitum Comp.
3 ii—3 i, 8.—30.

Calen'dula.—CALENDULA. *Marigold. The florets of Calendula officinalis.*

Calendulæ, *ad libitum.*

Tinctura Calendulæ, 3 i—iv, grm. 4.—15.

Calum'ba.—COLUMBO. *The root of Jateorhiza palmata*

Fluidextractum Calumbæ ℥ v—xxx, grm. .30—2.

Tinctura Calumbæ, 3 i—vi, 4.—24.

Cambo'gia.—GAMBOGE. *A gum-resin derived from Garcinia Hanburii.*

Cambogiæ, gr. i—v, grm. .06—.30

Cam'phora.—CAMPHOR. *A stearopten obtained from Cinamomum Camphora and purified by sublimation.*

Cam'phoræ, gr. iii—xx, grm. .20—1.30

Camphora Monobroma'ta, gr. iii—v, .20—.30

Aqua Camphoræ, 3 ss—ii, 15.—60.

Cera'tum Camphoræ. *External use.*

Linimentum Camphoræ, Cotton seed oil 4, C. 1.

Spiritus Camphoræ, 3 ss—i, 2.—4.

Can'nabis In'dica.—INDIAN CANNABIS. *INDIAN HEMP.*

The flowering tops of the female plant of Cannabis sativa, grown in the East Indies.

Extractum Cannabis Indicæ,

gr. $\frac{1}{4}$ — $\frac{1}{2}$, grm. .015—.03

Fluidextractum Cannabis Indicæ

℥ i—x, .06—.60

Tinctura Cannabis Indicæ, ℥ xx, 1.20

Can'tharis.—CANTHARIDES. *The insect Cantharis vesicatoria.*

Ceratum Cantharidis, *For blistering.*

Collodium Cantharida'tum, *For blistering.*

Emplastrum Picis Cantharidatum, "*Warming plaster.*"

Tinctura Canthar'idis, ℥ ii—v, grm. .12—.30

Cap'sicum.—CAPSICUM. *Cayenne Pepper. The fruit of Capsicum fastigiatum.*

Capsici, gr. ss—v. grm. .03—.30

Fluidextractum Capsici, ℥ i—x, .06—.60

Emplastrum Capsici,

Oleores'ina Capsici, ℥ ss—i, .03—.06

Tinctura Capsici, ℥ x—3 i, .60—4.

Car'bo Anima'lis.—ANIMAL CHARCOAL. *Charcoal prepared from bone.*

Carbonis Animalis.

Carbo Animalis Purifica'tus, as *antidote*, $\frac{3}{4}$ ss or more.

Carbo Ligni.—WOOD CHARCOAL. *Charcoal prepared from soft wood.*

Carbonis Ligni. 3 i— $\frac{3}{4}$ i, grm. 4.—30.

Carbo'nei Disul'phidum.—DISULPHIDE OF CARBON.

Carbo'nei Disulphidi. *As solvent*

Cardamo'mum.—CARDAMON. *The fruit of Elettaria repens.*

Tinctura Cardamomi. 3 ss—ii, grm. 2.—8.

Tinctura Cardamomi Composita,

3 i—iv, 4.—15.

Ca'rum.—CARAWAY. *The fruit of Carum Carvi.*

Oleum Cari, ℥ ss—v, grm. .03—.25

Cimicif'uga.—BLACK SNAKE-ROOT. *The rhizome and roots of Cimicifuga racemosa.*

Extractum Cimicifugæ, gr. i—v, grm. .06—.30

Fluidextractum Cimicifugæ, 3 ss—i, 2.—4.

Tinctura Cimicifugæ, 3 ss—ii, 2.—8.

Cincho'na.—CINCHONA. *The bark of several species of Cinchona, containing not less than 5 per cent. of the cinchona alkaloids, 4 per cent. of which should be achydrous, ether-soluble alkaloids.*

Fluidextractum Cinchonæ ℥ x—3i, grm. .60—4.

Tinctura Cinchonæ, 3 ss—ii, 2.—8.

Tinctura Cinchonæ Composita 3 ss—ii, 2.—8.

Cinchoni'na, } gr. i—3 ss, .06—2.

Cinchoni'næ Sul'phas, }

Cinchonidi'næ Sulphas, gr. i—xl, .06—2.60

Quini'na,	}	gr. i—xl,	.06—2.60
Quininæ Hydrobromidum,			
Quininæ Hydrochloridum,			
Quininæ Salicylas,			
Quininæ Sulphas,			
Oleatum Quininæ,			

Quini'næ Bisul'phas, gr. i—3 ss. .06—2.

Cincho'na Ru'bra.—RED BARK. *The bark of Cinchona succirubra, containing not less than 5 per cent. of its peculiar alkaloids.*

Tinctu'ra Cincho'næ Composita, *Huxam's Tincture,*
3 i—iv, grm. 4.—16.

Cinnaldehy'dum.—CINNAMIC ALDEHYDE. *An aldehyde*

obtained from oil of cinnamon or prepared synthetically.

Cinnamo'mum Saigo'nicum.—SAIGON CINNAMON. *The bark of an undetermined species of Cinnamomum.*

Cinnamo'mum Zeyla'nicum.—CEYLON CINNAMON. *The inner bark of the shoots of Cinnamomum Zeylanicum.*

Aqua Cinnamomi, as vehicle.

Fluidextractum Aromaticum, ℥ xv—3 i, grm. 1.—4.

Oleum Cinnamo'mi, ℥ i—ii, grm. .05—.10

Pul'vis Aromaticus, gr. x—3 ss, .60—2.

Spiritus Cinnamomi, ℥ x—3 ss, .60—2.

Tinctura Cinnamomi, ℥ xv—3 i, 1.—4.

Co'ca.—COCA. *The leaves of Erythroxylon Coca.*

Fluidextractum Cocæ, ℥ xv—3 i grm. 1.30—4.

Cocaine Hydrochloridum gr. ½—ii, grm. .0075—.12

Cocaina. *An alkaloid obtained from coca.*

gr. ss—i, grm. .03—.06

Oleatum Cocainæ.

Coc'cus.—COCHINEAL. *The dried female of Coccus cacti.*

Cocci (for infant), gr. ¼—i, grm. .02—.06

Codeine. See Opium.

Col'chici Cor'mus.—COLCHICUM CORM. *The corm of Colchicum autumnale.*

Extractum Colchici Cormi

gr. ss—ii, grm. .03—.12

Col'chici Se'men.—COLCHICUM SEED. *The seed of Colchicum autumnale,*

Fluidextractum Colchici Seminis,

℥ ii—vi. grm. .12—.36

Tinctura Colchici Seminis, 3 ss—i, 2.—4.

Vinum Colchici Seminis, 3 ss—i, 2.—4.

Colchi'cina.—*An alkaloid obtained from colchicum.*

gr $\frac{1}{100}$ — $\frac{1}{10}$ grm. .006—.0012

Collo'dium.—COLLODION.

Collodii,

Collodium Cantharida'tum,

Collodium Flex'ile,

Collodium Styp'ticum,

} *for external use.*

Colocyn'this.—COLOCYNTH. *The fruit of Citrullus Colocynthis, deprived of its rind.*

Extractum Colocyn'thidis. Ph. p.

gr. $\frac{1}{2}$ —iii, grm. .03—.20

Extractum Colocynthidis Comp. (*Ext. Colocy., Aloes and Resin of Scammony*),

gr. ii—xv, grm. .12—1.

Pilulæ Catharticæ Compositæ, 1—3 pills.

Pilulæ Catharticæ Vegeta'biles, 1—3 pills.

Coni'um.—HEMLOCK. *The full grown fruit of Conium maculatum gathered while yet green.*

Fluidextractum Conii, ℥ i—x. grm. .06—.60

Convalla'ria.—LILY OF THE VALLEY. *The rhizome and roots of Convallaria majalis.*

Fluidextractum Convallariæ

℥ v—xxx, grm. .30—2.

Copai'ba.—BALSAM OF COPAIBA. *The oleo-resin of*

Copaiba Langsdorffii and of other species of *Copaifera*.

Oleum Copaibæ, ℥ v—xx, grm. .30—1.20.

Corian'drum.—CORIANDER. *The fruit of Coriandrum Sativum.*

Corian'dri, in powder, gr. x— $\frac{3}{4}$ i, grm. .65—30.

Oleum Coriandri,, ℥ i—v, .06—.30

Creaso'tum.—CREASOTE. *A mixture of phenols obtained during the distillation of wood-tar.*

Creoso'te, ℥ i—ii, grm. .06—.12.

Aqua Creasoti, 3 i—iv, 4.—15.

Cre'sol.—CRESOL. *A Coal tar derivative.*

Liquor Cresolis Compositus

Cre'ta Praepara'ta.—PREPARED CHALK. *See Calcium.*

Cubeba.—CUBEB. *The unripe fruit of Piper cubeba.*

Cubebæ, in powder, 3 ss—i, grm. . 2.—4.

Fluidextractum Cubebæ
3 ss—ii, 2.—8.

Oleoresina Cubebæ, }
Oleum Cubebæ, } ℥ v—3 ss, grm. .30—2.

Trochisci Cubebæ, 1 = gr. $\frac{1}{2}$ of oleo-resin.

* **Cuprum.**—COPPER WIRE. *The metal Copper.*

Cupri Sulphas, gr. $\frac{1}{2}$ —ss, grm. .01—.03.

Emetic dose, gr. ii—x, .12—.65.

Cusso.—KOUSSO. BRAYERA. *The female inflorescence of Hagenia abyssinica.*

Cusso, $\frac{3}{4}$ ss, grm. 15.

Cypripe'dium.—LADIES' SLIPPER. *The rhizome and*

roots of *Cypripedium pubescens* and of *Cypripedium parvi florum*.

Cypripedii, gr. xv—3 ss, grm. 1.—2.

Fluidextractum Cypripedii ℥ xv—3 ss, 1.—2.

Decoc'ta.—DECOCTIONS.

Strength, 5 per cent. of crude drug.

Digita'lis.—FOXGLOVE. *The leaves of Digitalis purpurea from plants of the second year's growth.*

Digita'lis, in powder, gr. ss—ii, grm. .03—.12

Extractum Digitalis, gr. ½—1, .01—.03

Fluidextractum Digitalis ℥ ss—ii, .03—.12

Tinctura Digitalis ℥ iv—3 ss, .20—2.

Infusum Digitalis (66 ℥ = 1 gr.), 3 i—3 ss, 4.—15.

Ela'stica.—RUBBER. *The prepared milk-juice of various species of Hevea.*

Elateri'um.—ELATERIN. *A neutral principle obtained from Elaterium, a substance deposited by the juice of the fruit of Ecballium Elaterium.*

Elateri'ni, gr. ⅓—1, grm. .003+

Tritura'tio Elaterini, gr. ½, .03

Emplastrum Adhésium.—ADHESIVE PLASTER. *Made with Rubber, Petrolatum, and Lead.*

Er'gota.—ERGOT. SPURRED RYE. *The sclerotium of Claviceps purpurea replacing the grain of Secale cereale.*

Er'gotæ, in powder, 3 ss—i, grm. 2.—4.

Extractum Ergotæ, gr. iii—xii, .20—.80

Fluidextractum Ergotæ, 3 ss—i, 2.—4.

Vinum Ergotæ, 3 ii—iv, grm. 8.—15.
Eriodic'tyon.—ERIODICTYON. *The leaves of Eriodictyon glutinosum.*

Eriodictyi, gr. x—xxx, grm. .60—2.

Fluidextractum Eriodictyi, gr. x—xx, .60—1.20

* **Eucalyp'tus.**—EUCALYPTUS. *The leaves of Eucalyptus globulus, collected from the older parts of the tree.*

Eucalyp'ti, *not used.*

Fluidextractum Eucalypti, 3 i—ii, grm. 4.—8.

Eucalyptol, ℥ v—xxx, .30—2.

Oleum Eucalypti, ℥ v—xx, .30—1.20

Eugenol.—EUGENOL. *An unsaturated aromatic phenol obtained from oil of cloves.*

Euo'nymus.—WAHOO. *The bark of the root of Euonymus atropurpureus.*

Euo'nymi (*in decoction or infusion*),

℥ i—ii, grm. 30.—60.

Extractum Euonymi, gr. ii—v, .12—3

Fluidextractum Euonymi 3 ss—i, grm. 2.—4.

* Euonymin, gr. ii—v, .12—.30

Eupato'rium.—THOROUGHWORT. *Boneset. The leaves and flowering tops of Eupatorium perfoliatum.*

Eupatorii, gr. xv—xxx, grm. 1.—2.

Fluidextractum Eupatori,

℥ xv—3 ss, 1.—2.

Fel Bo'vis.—OX GALL. *The fresh bile of Bos Taurus.*

Fel Bovis Purificatum, gr. viii—xv, grm. .50—1.

Fer'rum.—IRON. *Metallic Iron, in the form of fine bright, and non-elastic wire.*

Ferrum Reduc'tum, *Quevenne's Iron,*

gr. ss—iii, grm. .03—.20

Massa Ferri Carbona'tis, *Vallet's Mass,*

gr. v—xx, grm. .30—1.30

Pilulæ Ferri Carbonatis 1 to 3 pills.

Ferri Car'bonas Sacchara'tus,

gr. v—xxx, .3—2.

Ferri Chlo'ridum,

Liquor Ferri Chloridi, } *External use.*

Tinctura Ferri Chloridi, *Muriated Tincture,*

℥ v—3 i, grm. .30—4.

Ferri Ci'tras,

gr. ii—v, .12—.30

Vinum Ferri

3 i—ii, 4.—8.

Liquor Ferri et Ammo'nii Acetatis,

3 ii—v, 8.—20.

Ferri et Ammonii Citras, gr. ii—v,

.12—.30

Ferri et Ammonii Sulphas, *Iron Alum,*

gr. i—v, .06—.30

Ferri et Ammonii Tartras,

gr. v—x, .3—.60

Ferri et Potassii Tartras, gr. v—x,

.3—.60

Ferri et Quini'næ Citras (12 per cent. *Quin.*),

gr. v—x, grm. .3—.60

Ferri et Quininæ Citras Solubi'lis (12 per cent. *Quin.*),

gr. v—x, grm. .3—.60

Vinum Ferri Ama'rum, 3 i—4.

4.—15.

Ferri et Strychni'næ Citras (1 per cent. Strych.),		
	gr. i—v,	grm.. 06—.30
Elixir Ferri, Quininae, et Strychninae Phosphatum.		
Syr. Ferri, Quin. et Strych. Phospha'tum,		
	3 i—ii,	5.—10.
Ferri Hypophos'phis,	gr. v—x,	.3—.60
Pilulæ Ferri Io'didi,	1—2 pills.	
Syrupus Ferri Iodidi,	℥x—xxx,	.60—2.
Ferri Phos'phas. Solubilis	gr. ii—v,	.12—.30
Ferri Pyrophos'phas Solubilis,		
	gr. ii—v,	.12—.30
Ferri Sul'phas,	gr. ss—iii,	grm. .03—.20
Ferri Sulphas Exsicca'tus,	gr. ss—ii,	.03—.12
Ferri Sulphas Granula'tus,	gr. ss—ii,	.03—.12
Liquor Ferri Subsulphatis (<i>Monsel's Sol.</i>)		
	℥ i—vi,	.06—.40
Liquor Ferri Tersulphatis, <i>used in preparing the two following.</i>		
Ferri Hydroxidum	} as antidote.	
Ferri Hydroxidum cum Magnesii Oxido,		
	℥ ss, grm. 16,	frequently repeated.
* Ferrum Dialysa'tum,	℥ xx—3 i,	1.2—4.
Mistura Ferri Composita,	℥ ss,	15.
Pilulæ Aloes et Ferri,	1 pill.	
Syrupus Hypophosphitum cum Ferro,		
	℥ v—3 i,	.3—4.

FIG.—*The fleshy receptacle of Ficus carica, bearing fruit upon its inner surface.*

Confec'tio Sen'næ, 3 i—ii, grm. 4.—8
 Fi'lix Mas.—MALE FERN. See Aspidium.

Fœnic'ulum.—FENNEL. *The fruit of Fœniculum capil-
 laceum.*

Aqua Fœniculi, 3 i—iv, grm. 4.—15.

Oleum Fœniculi, ℥ ii—x, .1—50

*Formaldehyde.—A gas obtained by the oxidation of
 methyl alcohol.

Liquor Formaldehydi should contain not less than
 37 per cent. by weight of the gas.

Fran'gula.—BUCKTHORN. *The bark of Rhamnus Fran-
 gula collected at least one year before being used.*

Fran'gulæ (in decoction), 3 ii—3 i, grm. 8.—32.

Fluidextractum Frangulæ,

3 ss—iss, 2.—6.

Gal'la.—NUTGALL. *An excrescence on Quercus lusitan-
 ica, caused by the punctures and deposited ova of
 Cynips Gallæ tinctoriæ.*

Tinctura Gallæ, 3 i—ii, grm. 4.—8.

Unguentum Gallæ, 20 per cent.

Gambir.—GAMBIR. *An extract prepared from the leaves
 and twigs of Ourouparia Gambir.*

Tinctura Gambir Compositus,

3 ss—ii, grm. 2.—8.

*Gaulthe'ria.—WINTERGREEN. *The leaves of Gaultheria
 procumbens.*

Oleum Gaultheriæ, ℥ ii—v, grm. .12—.30

Spiritus Gaultheriæ, 3 i—ii, 4.—8.

Gelati'num.—GELATIN. *The purified air-dried product of the hydrolysis of certain animal tissues, as skin and bones, etc*

Gelatinum glycerinatum. *Equal parts gelatin and glycerin with water*

Gelsem'ium.—YELLOW JASMINE. *The rhizome and roots of Gelsemium sempervirens.*

Fluidextractum Gelsemii, ℥ v—x. grm. .30—.60

Tinctura Gelsemii, ℥vi—xv .30—I.

Gentia'na.—GENTIAN. *The root of Gentiana lutea*

Extractum Gentianæ, gr. ii—x grm. .12—.60

Fluidextractum Gentianæ

℥ x—xxx, .60—2.

Tinctura Gentianæ Composita,

3 i—iv, 4.—16.

Gera'nium.—CRANESBILL. *The rhizome of Geranium maculatum.*

Fluidextractum Geranii. 3 ss—i grm. 2.—4.

Glan'dulæ suprarenales Sic'ca.—DESICCATED SUPRARENALS GLANDS. *The suprarenal gland of the sheep or ox freed from fat, cleaned, dried, and powdered,*

gr. iii—x, grm. .18—.60

Glan'dulæ Thyroï'deæ Sic'ca.—DESICCATED THYROID GLAND. *The thyroid gland of the sheep freed from fat, cleaned, dried and powdered.*

gr. i—v. grm. .06—.30

Glyceri'num.—GLYCERIN. *A liquid obtained by the*

decomposition of fats or fixed oils, and containing not less than 95 per cent. of absolute Glycerin.

Glyceri'ni ℥ x—3 i, grm. .60—4.

Glyceritum Acidi Tannici, ℥ xv—xxx, grm. 1.—2.

Glyceritum A'myli. *As vehicle.*

Glyceritum Boroglyceri'ni. *Antiseptic.*

Glyceritum Ferri, Quininae et Strychninae phosphatum. ℥ x—xx, grm. .6—1.20

Glyceritum Hydrastis. ℥ x—xxx, .60—2.

Glyceritum Phenolis. ℥ ii—viii, .12—.48

Suppositoria Glycerini.

Glycyrrhi'za.—LIQUORICE ROOT. *The root of Glycyrrhizaglabra, and of the variety glandulifera.*

Glycyrrhizæ (*in powder*), as excipient for pills.

Glycyrrhizi'num Ammonia'tum

gr. v—x, grm. .30—.60

Extractum Glycyrrhizæ, }
Fluidextractum Glycyrrhizæ, } *For flavoring.*

Extractum Glycerrhizæ Purum gr. xv, grm. 1.

Mistu'ra Glycyrrhizæ Composita

3 ss.—i, grm. 15.—30.

Pulvis Glycyrrhizæ Compositus

3 ss—ii, 2.—8.

Trochisci Glycyrrhizæ et Opii, 1=⅙ gr. Opium and 2 gr. Ext. Glycyr.

Elixir Adjuvans.

Gossyp'ium Purifica'tum.—PURIFIED COTTON. *The hairs of the seed of Gossypium herbaceum and of other*

species of Gossypium, freed from impurities and fatty matter.

Pyroxylin'um. *Gun Cotton.* Ph. p. for making *Colloidium*.

Oleum Gossypii Sem'inis. Ph. p.

Gossyp'ii Cor'tex.—COTTON ROOT BARK. *The bark of the root of Gossypium herbaceum, and of other species of Gossypium.*

Grana'tum.—POMEGRANATE. *The bark of the stem and root of Punica Granatum.*

Grana'ti (in decoction). gr. xx—xxx, grm. 1.20—2.

Fluidextractum Granati.

Grinde'lia.—GRINDELIA. *The leaves and flowering tops of Grindelia robusta.*

Fluidextractum Grindeliæ ℥ xv—3 i, grm. 1.—4.

Gual'acol.—GUAIACOL. *One of the chief constituents of creosote or prepared synthetically.*

℥ ss—iii, grm. .03—.20

Guaiacolis Carbonas, gr. ii—x. .12—.60

Guai'acum.—GUAIAAC. *The resin of the wood of Guaiacum officinale.*

Guaiacum, gr. x—xxx, grm. .60—2.

Tinctura Guaiaci, }
Tincura Guaiaci Ammoniata, } 3 ss—ii, 2.—8.

Guara'na.—GUARANA. *A dried paste chiefly consisting of the crushed or powdered reeds of Paullina Cupana.*

Guara'næ, gr. viii—xlv, grm. .50—3.

Fluidextractum Guaranæ, ℥ viii—xlv, grm. .59—3.
Hæmatoxylon.—LOGWOOD. *The heart-wood of H. campechianum.*

Extractum Hæmatoxyli, gr. v—xx, grm. .30—1.20

*Decoctum Hæmatoxyli, ʒ i—ii, 30.—60.

Hamamelidis Cor'tex.—HAMAMELIS BARK. Aqua Hamamelidis, ℥ xxx—3 i, grm. 2.—4.

Hamamelidis. Fo'lia—WITCH HAZEL. *The leaves of Hamamelis virginica, collected in autumn.*

Hamamelidis.

Fluidextractum Hamamelidis Foliorum,

℥ xv—3 ii, grm. 1.—8.

Hedeoma.—AMERICAN PENNYROYAL. *The leaves and tops of Hedeoma pulegioides.*

Oleum Hedeomæ, ℥ ii—v, grm. .12—.30

Hexamethylenamina.—HEXAMETHYLENAMINA (Urotropin). *A condensation product obtained by the action of ammonia upon formaldehyde.*

gr. v—x, grm. .30—.60

Homatopinae Hydrobro'midum.—See under BELLA-DONNA.

Hu'mulus.—HOPS. *The strobiles of Humulus Lupulus. Lupuli'num, powder separated from Hops.*

gr. v—3 ss, grm. .30—2.

Fluidextractum Lupulini 3 ss—ii, 2.—8.

Oleoresi'na Lupulini, ℥ v—3 ss, .30—2.

Hydrargyrum.—MERCURY. *A silver-white metal, liquid at common temperatures, having a sp. gr. of 13.5.*

PREPARATIONS FOR INTERNAL USE.

Hydrargyri.

Hydrargyrum cum Creta, *Gray Powder* (*Hydg.* 38 *per cent.*),
gr. v—xxv, grm. .30—1.50

Massa Hydrargyri, *Blue Mass* (33 *per cent.*).

gr. i—x, grm. .06—.65

Hydrargyri Chlo'ridum Mite. *Calomel.*

gr. ss—xv, .03—1.

Pilulæ Antimonii Compositæ (*see Antimony*), *Plummer's Pills.*

Piulæ Catharti'cæ Compositæ, 1—3 pills.

Hydrargyri Io'didum Flavum, *Yellow Mercurous Iodide*,

gr. $\frac{1}{4}$ —1, grm. .012—.06

Hydrargyri Chlo'ridum Corrosi'vum, *Corrosive Sublimate*,

gr. $\frac{1}{80}$ — $\frac{1}{10}$, grm. .002—.006

Hydrargyri Io'didum Ru'brum, *Red Iodide*,

gr. $\frac{1}{80}$ — $\frac{1}{10}$.002—.006

PREPARATIONS FOR EXTERNAL USE ONLY.

Emplastrum Ammoni'aci cum Hydrargyro.

Emplastrum Hydrargyri.

Unguentum Hydrargyri, 50 *per cent. mercury.*

Unguentum Hydrargyri Dilutum. *Blue ointment.* 67
per cent. Unguentum Hydrargyri.

Hydrarg'yrum Ammonia'tum.

Unguentum Hydrargyri Ammoniati, 10 *per cent.*

Hydrargyri Ox'idum Rubrum.

Unguentum Hydrargyri Oxidi Rubri, 10 per cent.

Hydrargyri Oxidum Flavum.

Oleatum Hydrargyri, 25 per cent. of yellow Oxide.

Unguentum Hydrargyri Oxidi Flavi, 10 per cent.

Liquor Hydrargyri Nitra'tis. (Red Ox. 8, Nit. acid 9,
Aq. 3.) (Caustic.)

Unguentum Hydrargyri Nitratis. *Citrine ointment.*

Hydras'tis.—GOLDEN SEAL. *The rhizome and roots of*
Hydrastis Canadensis.

Fluidextractum Hydrastis 3 ss—ii, grm. 2.—8.

Glyceritum Hydrastis, 3 ss—ii, 2.—8.

Tinctura Hydrastis, 3 ss—i, 2.—4.

Hydrastininæ Hydrochloridum,

gr. $\frac{1}{8}$ — $\frac{1}{4}$.005—.01

Hydras'tina—Hydrastine. *An alkaloid obtained from*
Hydrastis. gr. $\frac{1}{4}$ —ss, grm. .015—.03

Hyoscy'amus.—HENBANE. *The leaves and flowering*
tops of Hyoscyamus niger, collected from plants of
the second year's growth.

Hyoscy'ami, gr. v—x, grm .30—.65

Extractum Hyoscyami, gr. i—iii, .06—.20

Fluidextractum Hyoscyami, ℥ v—3 ss, .30—2.

Tinctura Hyoscyami, 3 ss—ii, 2.—8.

Hyoscinae Hydrobromidum,

gr. $\frac{1}{16}$ — $\frac{1}{8}$, .0004—.0006

Hyoscyami'næ Hydrobromidum,

gr. $\frac{1}{8}$ — $\frac{1}{4}$, .001—.003

Hyoscyaminæ Sulphas, gr. $\frac{1}{8}$ —i, .001—.06

Infu'sa.—INFUSIONS. *Strength, 5 per cent. of crude substance.*

Iodofo'r'mum.—IODOFORM.

Iodofo'r'mi, *mostly external use,*

gr. i—iii, grm. .06—.18

Unguentum Iodoformi, *10 per cent.*

Io'dum.—IODINE. *A bluish-black non-metallic element, obtained principally from the ashes of sea-weeds.*

Io'di, gr. $\frac{1}{4}$ —i, grm. .015—.06

Liquor Iodi Comp. (*Lugol's Sol.*),

℥ iii—x, .18—.60

Ammonii Io'didum, gr. ii—x, .12—.60

Potassii Iodidum, gr. v—3 i, .30—4.

Syrupus Acidi Hydriod'ici, 3 i— $\frac{3}{4}$ i, 5.—40.

FOR EXTERNAL USE ONLY.

Tinctura Iodi, *7 per cent.*

Unguentum Iodi (*Iodine, 4 per cent., Pot. Iod., 1 per cent.*).

Unguentum Potassii Iodidi, *12 per cent.*

Iodol'um.—IODOL. *Obtained by the action of iodine upon the base pyrol in the presence of alcohol.*

gr. ss—ii, grm. .03—.12

Ipecacuan'ha.—IPECAC. *The root of Cephælis Ipecacuanha.*

Ipecacuanhæ (*in powder*), gr. i—3 ss, grm. .06—2.

Fluidextractum Ipecacuanhæ

℥ i—3 ss, .06—2.

Pulvis Ipecacuanhæ et Opii, *Dover's powder*

gr. v—xv, grm. .30—1.

Tinctura Ipecacuanhæ et Opii,

℥ iii—xv .18—1.

Syrupus Ipecacuanhæ, }
Vinum Ipecacuanhæ, } ℥ v—3 ii, .30—8.

Trochisci Morphinae et Ipecacuanhæ, 1 = Morphine gr.

℥ss. Ipecac. gr. ʒss.

Jala'pa.—JALAP. *The tuberous root of Ipomæa Jalapa.*

Jala'pæ (*in powder*), gr. v—xx, grm. .30—1.30

Resi'na Jalapæ, gr ii—iv, .12—.25

Pulvis Jalapæ Compositus (*Jalap. 35, Pot. Bitart. 65.*)

gr. x—3 i. grm. .60—4.

***Junip'erus.**—JUNIPER. *The fruit of Juniperus communis.*

Oleum Juniperi, ℥ ii—v, grm. .12—.30

Spiritus Juniperi, 3 ss—i, 2.—4.

Spiritus Juniperi Comp., 3 i—iv, 4.—15.

Kaol'inum.—KAOLIN. *A native aluminum silicate.*

Kino.—KINO. *The inspissated juice of Pterocarpus Marsupium.*

Kino (*in powder*), gr. v—3 ss. grm. .30—2.

Tinctura Kino, 3 i—ii, 4.—8.

Krame'ria.—RHATANY. *The root of Krameria triandra and of K. Ixina.*

Krameriaë, gr. x—xx, grm. .60—1.30

Extractum Krameriaë, gr. v—x, .30—.60

Trochisci Krameriaë, 1 = 1 gr. of Ext.

- Fluidextractum Krameriaë ℥ v—xx, grm. .30—1.20
 Syrupus Krameriaë, 3 i—iv, 4.—20.
 Tinctura Krameriaë, 3 ss—ii, 2.—8.
- Lactuca'rium.**—LACTUCARIUM. *The concrete milk-juice of Lactuca virosa, Lettuce Opium.*
- Lactucarii, gr. x—3 i, grm. .60—4.
 Syrupus Lactucarii, 3 ii—iv, 10.—20.
 Tinctura Lactucarii, ℥ xv—xxx, 1.—2.
- Lap'pa.**—BURDOCK. *The root of Lappa officinalis.*
- Lap'pæ (in infusion) 3 ss—i, grm. 2.—4.
 Extractum Lappæ Fluidum. ℥ x—3 i, .60—4.
- * Lavan'dula.**—LAVENDER. *The flowers of Lavandula vera.*
- * Oleum Lavandulæ, ℥ i—v, grm. .06—.30
 Oleum Lavandulæ Florum, ℥ i—v, .06—.30
 Tinctura Lavandulæ Composita,
 3 ss—i, 2.—4.
 Spiritus Lavandulæ, 3 ss—i, 2.—4.
- Leptan'dra.**—LEPTANDRA. *The rhizome and roots of Veronica virginica.*
- Leptandræ, gr. x—3 i, grm. .60—4.
 Extractum Leptandræ, gr. ii—iv, .12—.25
 Fluidextractum Leptandræ ℥ x—3 i, .60—4.
- Limo'nis Cor'tex.**—LEMON PEEL. *The rind of the recent fruit of Citrus Limonum.*
- Oleum Limonis, .
 Tinctura Limonis Corticis. *For flavoring.*
 Syrupus Acidi Citric. *As a vehicle.*

Marru'bium.—HOREHOUND. *The leaves and tops of*
Marrubium vulgare.

Marrubii, 3 ss—3 i, grm. 2.—4.

Mast'iche.—MASTIC. *The concrete resinous exudation*
from Pistacia lentiscus.

Pilulæ Aloës et Mas'tiches. *See Aloes.*

Ma'tico.—MATICO. *The leaves of Piper angustifolium.*

Ma'tico, 3 ss—ii, grm. 2.—8.

Fluidextractum Matico, 3 ss—ii, 2.—8.

Matrica'ria.—GERMAN CHAMOMILE. *The flower-heads of*
Matricaria Chamomilla.

Matricariæ (*in inf. or decoc.*), *ad libitum.*

Mel.—HONEY. *A saccharine secretion deposited in the*
honey-comb by Apis mellifica.

Mel Depuratum. *As vehicle.*

Men'tha Piperi'ta.—PEPPERMINT. *The leaves and tops*
of Mentha Piperita.

Aqua Menthæ Piperitæ. *As vehicle.*

Oleum Menthe Piperitæ, ℥ i—v, grm. .06—.30

Spiritus Menthæ Piperitæ, ℥ v—3 ss, .3—2.

Mentha Vir'idis.—SPEARMINT. *The leaves and tops of*
Mentha viridis.

Aqua Menthæ Viridis. *As vehicle.*

Oleum Menthæ Viridis, ℥ i—v, grm. .06—.30

Spiritus Menthæ Viridis, ℥ v—3 ss, .30—2.

Men'thol.—MENTHOL. *A stearopten obtained from oil of*
peppermint.

Menthol. *External use.*

Meth'ylic Salicy'las. †—ARTIFICIAL OIL OF WINTER-GREEN.

Methylthioni'az Hydrochlo'ridum.—METHYLENE BLUE.

gr. i—v, grm. .06—.30

Meze'reum.—MEZEREUM. *The bark of Daphne Meze'reum and of other species of Daphne.*

Fluidextractum Mezerei, Ph.p.

Mos'chus.—MUSK. *The dried secretion from the prepu'tial follicles of Moschus Moschiferus.*

Moschi, gr. v—x, grm. .30—.60

Tinctura Moschi, ʒ ss—ii, 2.—8.

Myris'tica.—NUTMEG. *The seed of Myristica fragrans deprived of its testa.*

Myristica (in powder), gr. v—xv, grm. .30—1.

Oleum Myristicæ, ℥ i—ii, .05—.10

My'rha.—MYRRH. *A gum-resin obtained from Commiphora Myrrha. See also under Aloes.*

Myrrhæ (in powder), gr. v—ʒ ss, grm. .30—2.

Tinctura Myrrhæ, ℥ x—ʒ ss, .60—2.

Naphthale'num.—NAPHTALIN. *A hydrocarbon obtained from coal-tar. Antiseptic.*

Nux Vom'ica.—*The seed of Strychnos Nux-Vomica.*

Extractum Nucis Vomicae, gr. ʒ—ʒ, grm. .015—.03

Fluidextractum Nucis Vomicae

℥ i—v, .06—.30

† Methyl Salicylate is identical with Oleum Betulæ Volatile and nearly identical with Oleum Gaultheriæ.

- Tinctura Nucis Vomicae, ℥v—xx, .3—1.20
 Strychni'na. *An alkaloid of Nux-Vomica.*
- Strychninae Nitras, gr. $\frac{1}{80}$ — $\frac{1}{40}$, grm. .001—.003.
 Strychninae Sulphas, gr. $\frac{1}{80}$ — $\frac{1}{40}$, .001—.003.
- O'leum Æthe'reum.—ETHEREAL OIL. *Used in Spiritus Ætheris Compositus.*
- O'leum Bet'ulæ.†—OIL OF SWEET BIRCH. *A volatile oil obtained by distillation from the bark of Betula lenta.* ℥ii—v, grm. .12—.30
- Oleum Ca'dinum.—OIL OF CADE. *A product of the dry distillation of the wood of Juniperus Oxycedrus.*
- Olei Cadini. *External use.*
- Oleum Cajupu'ti.—OIL OF CAJUPUT. *A volatile oil distilled from the leaves of Melaleuca Leucadendron.*
- Olei Cajupu'ti, ℥i—v, grm. .06—.30
- Oleum Erigeron'tis.—OIL OF ERIGERON. *Oil of Fleabane. A volatile oil distilled from the fresh, flowering herb of Erigeron canadense.*
- Olei Erigerontis, ℥v—x, grm. .30—.60
- Oleum Mor'rhuae.—COD-LIVER OIL. *A fixed oil obtained from the fresh livers of Gadus Morrhua and of other species of Gadus.*
- Olei Mor'rhuae, ℥i— $\frac{3}{4}$ ss., grm. 4.—15.

† Oil of Sweet Birch is identical with Methyl Salicylate and nearly identical with Oleum Gaultheriæ.

Emulsum Olei Morrhuae 3 ii—iv, grm. 8.—16.

Emulsum Olei Morrhuae cum Hypophosphitibus,
3 ii—iv, grm. 8.—16.

Oleum Oli'væ.—OLIVE OIL. *A fixed oil expressed from the ripe fruit of Olea europæa.*

Olei Olivæ, 3 i—iv, grm. 30.—120.

Oleum Ric'ini.—CASTOR OIL. *A fixed oil expressed from the seed of Ricinus communis.*

Olei Ricini, 3 ii—3 i, grm. 8.—30.

Oleum Rosmari'ni.—OIL OF ROSEMARY. *A volatile oil distilled from the leaves of Rosmarinus officinalis.*

Olei Rosmarini, ʒ i—v, grm. .06—.30

Oleum San'tali.—OIL OF SANTAL. *A volatile oil distilled from the wood of Santalum album.*

Olei Santali, ʒ ii—x, grm. .12—.60

Oleum Theobro'matis.—BUTTER OF CACAO. *A fixed oil expressed from the seed of Theobroma cacao. Used in preparing suppositories.*

Oleum Thy'mi.—OIL OF THYME. *A volatile oil distilled from Thymus vulgaris.*

Olei Thymi. *External use.*

Thymol. *Antiseptic.* gr. ss—ii, grm. .3—.12

Oleum Tig'lii.—CROTON OIL. *A fixed oil expressed from the seed of Croton Tiglium.*

Olei Tiglii, ʒ ¼—iii, grm. .015—.20

O'pium.—OPIUM. *The concrete milky exudation obtained by incising the unripe capsules of Papaver somni-*

ferum, and yielding, in its normal moist condition, not less than 9 per cent. of crystallized Morphine.

Opium,	}	gr. $\frac{1}{4}$ —ii,	grm. .015—.12
Opium Pulvis,			
Opium Deodoratum			
Opium Granulatum,			

In the preparations of Opium the amount containing, or equivalent to, one grain of Opium is given, and not the dose.

Acetum Opii(<i>Black drop</i>),	}	℥ x,	grm. .60
Vinum Opii,			
Tinctura Opii(<i>Laudanum</i>),			
Tinctura Opii Deodora'ti,			
Tinctura Ipecac. et Opii,			
Tinctura Opii Camphorata (<i>Paregoric</i>),			

3 ss—ii, 2.—8.

Extractum Opii, gr. ss, .03

Pilulæ Opii, Pil. i.

Pulvis Ipecac. et Opii (*Dover's powder*,) (O. i, Ip. i.

Sacch. Lactis 8), gr. v—xx, grm. .30—1.20

Trochisci Glycyrrhizæ et Opii, xiii = gr. i.

Emplastrum Opii, *Ext. Opii*. i in 17.

ALKALOIDS OF OPIUM.

Morphi'na,	Ph. p		
Morphinæ Ace'tas,	}	gr. $\frac{1}{4}$,	grm. .01.
Morphinæ Hydrochlorodum			
Morphinæ Sulphas,			

Pulvis Morphinae Compositus (*Tully's powder*.)

(*Morph. sulph.* 1 part, *Camphor* 20, *excipient* 40)

gr. x, grm. .65

Codei'na, gr. $\frac{1}{4}$ —ii, .015—.12

Codeinae Phosphas }
Codeinae Sulphas, } gr. ss—ii, .03—.12

* **Narcotinae Hydrochloras**,

gr. ii—x .12—.60.

Apomorphinae Hydrochloras. *Emetic. Dose for Hypodermic injection*, gr. $\frac{1}{16}$ — $\frac{1}{8}$, grm. .004—.006

Pancreati'num.—**PANCREATIN**. *A mixture of enzymes usually obtained from the pancreas of the hog.*

Pancreatini, gr. v—xv, grm. .30—1.

Paraffi'num.—**PARAFFIN**. *A mixture of solid hydrocarbons, obtained from petroleum.*

Paraldehy'dum.—**PARALDEHYDE**. *A polymeric form of Ethylic Aldehyde.*

Paraldehydi, gr. x—3 i, grm. .60—4.

Parei'ra.—**PAIREIRA BRAVA**. *The root of Chondodendron tomentosum.*

Parei'ræ (*in decoction*), 3 ss—i, grm. 2.—4.

Fluidextractum Pareiræ, 3 ss—i, 2.—4.

Pelletierinae Tannas.—**PELLETIERINÆ TANNATE**. *A mixture of alkaloids obtained from Punica Granatum.*

Pe'po.—**PUMPKIN SEED**. *The seed of Cucurbita Pepo.*

Peponis, *in emulsion*. $\frac{3}{4}$ i—ii, grm. 30.—60.

Pepsinum.—PEPSIN. *A proteolytic enzyme obtained from the mucous membrane of the stomach of the hog.*

* Liquor Pepsini, 3 ii—iv, grm. 8.—15.

Petrolatum Album.—WHITE PETROLATUM. *A colorless mixture of hydrocarbons obtained by the distillation of petroleum.*

Petrolatum Liquidum.—LIQUID PETROLATUM.

Petrolatum Spissum.—PETROLATUM. *Mixtures of hydrocarbons obtained from petroleum. For external use and Ph. p.*

***Petroselinum.**—PARSLEY ROOT.

* Apiol, gr. iii—xv, grm. .18—1.

Phenol.—PHENOL. (Acidum Carbolicum Pharm. of 1890). *Hydroxybenzine. Obtained either from coal tar or made synthetically.*

gr. ss—i, grm. .03—.06

Phenol Liquefactum. 86 per cent phenol.

Glyceritum Phenolis. ℥ ii—viii grm. .12—.50

Unguentum Phenolis.

Phosphorus.—PHOSPHORUS. *A translucent, nearly colorless solid, resembling wax. Very inflammable.*

Phosphori, gr. $\frac{1}{100}$ — $\frac{1}{50}$ grm. .0006—.003

Acidum Hypophosphorosum Dilutum (See).

Acidum Phosphoricum (See).

Pilule Phosphori, 1 = $\frac{1}{100}$ gr.

Zinci Phosphidum, gr. $\frac{1}{10}$ — $\frac{1}{5}$, grm. .005—.02

Calcii	}	Hypophosphis, gr. v—xx, grm. .30—1.30
Sodii		
Potassii		
Ferri		
Syrupus Hypophosphitum,	}	3 ii—3 i 10.—40.
Syrupus Hypophosphitum		
cum Ferro		

Physostig'ma.—CALABAR BEAN. *The seed of Physostigma venenosum.*

Extractum Physostig'matis,
gr. $\frac{1}{8}$ — $\frac{1}{4}$, grm. .004—.01

Tinctura Physostigmatis, ℥ x—xv, .60—1.

Physostigmi'næ Salicy'las, $\frac{1}{16}$ — $\frac{1}{8}$, grm. .001—.005

Physostigmi'næ Sulphas, gr. $\frac{1}{16}$ — $\frac{1}{8}$, .001—.006

Phytolacca.—POKE ROOT. *The root of P. decandra.*

Phytolacca, gr. i—xxx, grm. .06—2.

Fluidextractum Phytolaccæ,
℥ i—xxx, .06—2.

Pilocar'pus.—JABORANDI. *The leaflets of Pilocarpus Selloanus and of Pilocarpus Jaborandi.*

Pilocarpi, gr. v—3 i, grm. .30—4.

Fluidextractum Pilocarpi, ℥ v—3 i, .30—3.75

Pilocarpinæ Hydrochloridum, gr. $\frac{1}{4}$ — $\frac{1}{2}$, .008—.02

Pilocarpinæ Nitras, gr. $\frac{1}{4}$ — $\frac{1}{2}$, .008—.03

Pimen'ta.—ALLSPICE. *Nearly ripe fruit of P. officinalis.*

Pimentæ (*in powder*), gr. v—3 ss, grm. .30—2.

Oleum Pimentæ, ℥ i—iv, .06—.25

Pi'per.—BLACK PEPPER. *The unripe fruit of Piper nigrum.*

Piperis, gr. i—xx, grm. .06—1.3.

Oleoresina Piperis, ℥ ss—ii, .03—.12.

Piperinum, gr. i—x, .06—.65.

* **Pix Burgun'dica.**—BURGUNDY PITCH. *The prepared resinous exudation of Abies excelsa.*

Emplastrum Pi'cis Burgundicæ.

Also in 2 other plasters.

Pix Liq'uida.—TAR. *An empyreumatic oleoresin obtained by the destructive distillation of the wood of Pinus palustris, and of other species of Pinus.*

Oleum Picis Liquidæ. *External use.*

Syrupus Picis Liquidæ, ʒ ss, grm. 15.

Unguentum Picis Liquidæ. *One-half Tar.*

Plum'bum.—LEAD. *The metal not used.*

Plumbi Ace'tas, *Sugar of lead,*

gr. ss—v, grm. .03—.30

EXTERNAL USE ONLY.

Liquor Plumbi Subaceta'tis. (*Goulard's Extract.*)

Liq. Plumbi Subaceta'tis Dilutus.

Ceratum Plumbi Subacetatis, (*Goulard's Cerate.*)

Plumbi Io'didum.

Plumbi Nitras.

Plumbi Ox'idum. *Litharge.* Ph. p.

Emplastrum Plumbi. *Lead plaster; used also in making nine other plasters.*

Unguentum Diachylon. *One-half Lead Plaster.*

Podophyl'lum.—MAY APPLE. *The rhizome and roots of Podophyllum peltatum.*

Podophyl'li, gr. x—xx, grm. .65—1.30

Fluidextractum Podophylli ℥ x—xx, .65—1.30

Pilulæ Podophylli, Belladonnæ et Capsici, 1 *pill*

Resina Podophyl'li, gr. $\frac{1}{2}$ —1, grm. .005—.02

* **Potas'sium.**—POTASSIUM. *A metal.*

Potassii Hydroxidum. *Caustic Potash. Caustic.*

Liquor Potassii Hydroxidi ($5\frac{1}{2}$ per cent.),

℥ v—xx, grm. .30—1.30

Potassii Ace'tas, gr. x—3 i, .60—4.

Potassii Carbonas, gr. v—3 ss, grm. .30—2.

Potassii Bichro'mas, gr. $\frac{1}{2}$ —ss, .01—.03

Potassii Bromidum, gr. v—3 i, .30—4.

Potassii Bitar'tras. *Cream of Tartar,*

gr. v—3 ii .30—8.

Potassii et Sodii Tartras. *Rochelle salt,*

3 i—3 i, 4.—30.

Potassii Chlo'ras, gr v.—3 ss, .30—2.

Trochisci Potassii Chlora'tis, 1 = gr. v.

Potassii Ci'tras, gr. v—3 ss, .30—2.

Potassii Citras Effervescens, gr. x—3 i, grm. .60—4.

Liquor Potassii Citra'tis $\frac{3}{4}$ ss, grm. 15.

Potassii Dichromas, gr. x—3 i. .60—4.

Potassii Hypophosphis, gr. v—xx, .30—1.30

Potassii Iodidum, gr. v—3 i .30—4.

Potassii Ferrocyan'idum, Ph. p.

Potassii Nitrates, gr. v—xx, .30—1.30

Potassii Perman'ganates, gr. ss—ii, .03—.13

Potassii Sulphas, 3 i— $\frac{3}{4}$ ss, 4.—15.

Prunum.—PRUNE. *The fruit of Prunus domestica.*

Enters into Confectio Sennæ.

Prunus Virginia'na.—WILD CHERRY. *The bark of*

Prunus serotina, collected in autumn.

Fluidextractum Pruni Virginianæ,

3 ss—i, grm. 2.—4.

Infusum Pruni Virginianæ,

$\frac{3}{4}$ ii, 6o.

Syrupus Pruni Virginianæ. *As vehicle.*

Pulvis Effervescens Compositus.—*See under Sodium.*

Pyre'thrum.—PELLITORY. *The root of Anacyclus Pyrethrum.*

Pyre'thri, 3 ss—i, grm. 2.—4.

Tinctura Pyrethri. *Locally.*

Pyrogal'lol.—PYROGALLIC ACID. *A triatomic phenol obtained chiefly by the dry distillation of Gallic Acid.*

External use.

Quas'sia.—QUASSIA. *The wood of Picræna excelsa.*

Quassia, gr. xv—xxx, grm. 1.—2.

Extractum Quassia, gr. ss.—iii, .03—.20

Fluidextractum Quassia, 3 ss—i, grm. 2.—4.

Tinctura Quassia, ℥ xv—3 i, 1.—4.

Quer'cus.—WHITE OAK. *The bark of Quercus alba.*

Fluidextractum Quercus,

℥ xxx—lx, grm. 2.—4.

Quilla'ja.—SOAP BARK. *The bark of Quillaja Saponaria*

Fluidextractum Quillajæ.

Tinctura Quillajæ, 3 i—iii, grm. 4.—12.

Resi'na.—RESIN. *The residue left after distilling off the volatile oil from Turpentine.*

Ceratum Resinæ, Basilicon ointment.

Ceratum Resinæ Compositum.

Emplastrum Adhesivum.

Resorcinol.—RESORCINOL. *A diatomic phenol.*

Resorcinol, gr. ii—xv, grm. .12—1.

Rham'nus Purshia'na.—CASCARA SAGRADA. *The bark of Rhamnus Purshiana.*

Extractum Rhamni Purshianæ. *Average dose,*

gr. iv, grm. .25

Fluidextractum Rhamni Purshianæ,

gr. xv—3 i, 1.—4.

Fluidextractum Rhamni Purshianæ Aromaticum,

Average dose ℥ xv, grm. 1.

Rhe'um.—RHUBARB. *The root of Rheum officinale.*

Rhei (*in powder*), gr. i—3 i, grm. .06—4.

Extractum Rhei, gr. ii—x, .12—.60

Fluidextractum Rhei, ℥ i—3 i, .05—4.

Mistura Rhei et Sodæ, 3 ii—3 iii, 8.—90.

Pilulæ Rhei Compositæ, (*R. gr. ii, Aloes, gr. iss*),

1 to 4 pills.

Tinctura Sanguinariae, ℥ xv—3 ss. grm. 1.—2.
San'talum Ru'brum.—RED SAUNDERS. *The wood of Pterocarpus santalinus. Used as a coloring agent.*
Santonica.—SANTONICA. *The unexpanded flower-heads of Artemisia pauciflora.*

Santonicae, gr. x—xx, grm. .65—1.30
Santoni'num, Santonin. gr. ss—v, .03—.30
Trochisci Santonini, 1 = gr. ss.

Sa'po.—SOAP. *Soap prepared from soda and olive oil.*

Emplastrum Saponis.

Linimentum Saponis. *As a vehicle for liniments.*

Sa'po Mol'lis.—SOFT SOAP. GREEN SOAP. *Soap prepared from potassa and linseed oil.*

Linimentum Sapo'nis Mollis. *External use.*

Sarsaparil'la.—SARSAPARILLA. *The root of Smilax officinalis, S. medica, S. papyracea, and of other undetermined species of Smilax.*

Fluidextractum Sarsaparillae,
 3 ss—iss, grm. 2.—6.

Fluidextractum Sarsaparillae Compositum,
 3 i, 4.

Syrupus Sarsaparillae Compositus,
 3 ii—3 i, 8.—30.

Sas'safras.—SASSAFRAS. *The bark of the root of Sassafras variifolium.*

Oleum Sassafras, ℥ i—v, grm. .05—.25

Sas'safras Medul'læ.—SASSAFRAS PITH. *The pith of Sassafras officinalis.*

Mucilago Sassafras Medullæ, *As collyrium and drink.*

Scammo'nium.—SCAMMONY. *A resinous exudation from the living root of Convolvulus Scammonia.*

Scammo'nii, gr. v—xv, grm. .30—1.

Resina Scammonii, gr. ii—x, .12—.60

Scill'la.—SQUILL. *The sliced bulb of Urginea maritima.*

Scillæ, gr. ss—iii, grm. .03—.20

Acetum Scillæ, ℥ xv—3 i, 1.—4.

Tinctura Scillæ, ℥ x—3 ss, .60—2.

Syrupus Scillæ, 3 ss—i, 2.—4.

Syrupus Scillæ Compositus, *Hive Syrup* (Tart. Emet. 2 parts in 1000), ℥ v—3 ss, grm. .30—2.

Fluidextractum Scillæ, ℥ ss—iii, .03—.20

Scopa'rius.—BROOM. *The tops of Cytisus Scoparius.*

* Decoctum Scoparii, 3 ss—i, grm. 15.—30.

Sparte'i'næ Sulphas, gr. ʒ—ii, .006—.12

Scopo'la.—SCOPOLA. *The dried rhizome of Scopolia Carniolica.*

Extractum Scopolæ, gr. ʒ—1, grm. .008—.015

Fluidextractum Scopolæ, ℥ ʒ—iii, .025—.20

Scopolam'inæ Hydrobro'midum.—SCOPOLAMINE HYDROBROMIDE. *The hydrobromide of an alkaloid obtained from plants of the Solanaceæ; chemically identical with Hyoscine Hydrobromide.*

gr. 100—1 grm. 0.0006—.001

Scutella'ria.—SCULLCAP. *The herb of scutellaria lateriflora.*

Fluidextractum Scutellarizæ, 3 i—ii, grm. 4.—7.50

Sen'ega.—SENEGAL. *The root of Polygala Senega.*

Fluidextractum Senegæ, ℥ x—xx, grm. .60—1.30

Syrupus Senegæ, 3 i—ii, 5.—10.

Sen'na.—SENNA. *The leaflets of Cassia acutifolia and of Cassia angustifolia.*

Confectio Sennæ, 3 i—ii, grm. 4.—8.

Fluidextractum Sennæ, 3 i—iv, 4.—16.

Infusum Sennæ Compositum, ℥ iv, 120.

Pulvis Glycyrrhi'zæ Compositus,
3 ss—ii, 2.—8.

Syrupus Sennæ, 3 i—iv, 5.—20.

Serpenta'ria.—VIRGINIA SNAKEROOT. *The rhizome and roots of Aristolochia Serpentina and of Aristolochia reticulata.*

Fluidextractum Serpentiariæ,
℥ x—xxx, grm. .60—2.

Tinctura Serpentiariæ, 3 i—ii, 4.—8.

Serum Antidiphthe'ricum.—DIPHTHERIA ANTITOXIN. *A fluid separated from the coagulated blood of a horse, immunized through the inoculation of diphtheric toxin. Average dose 3000 units. Immunizing dose for well person, 500 units.*

Se'vum.—SUET. *The internal fat of the abdomen of Ovis Aries purified by melting and straining.*

Sevum Preparatum.—PREPARED SUET.

Sevi, Ph. p. only.

Sina'pis Alba.—WHITE MUSTARD. *The seed of Brassica Alba.*

Sina'pis Ni'gra.—BLACK MUSTARD. *The seed of Brassica Nigra.*

Charta Sinapis.

Oleum Sinapis Vola'tile (*diluted*), } *External use.*

* **Sodium.**—SODIUM. *The metal.*

Liquor Sodii Hydroxidi, ℥ v—xv, grm. .30—1

Liquor Sodæ Chlorinatæ,

Liquor Sodii Arsenatis, ℥ i—v, .06—.30

Sodii Ace'tas, gr. x—3 i, .60—4.

Sodii Ar'senas, gr. $\frac{1}{10}$ — $\frac{1}{10}$, .001—.006

Sodii Arsenas Exsiccatus gr. $\frac{1}{10}$ — $\frac{1}{10}$.0006—.002

Sodii Ben'zoas, gr. v—xx, .30—1.30

Sodii Bisulphis, gr. viii—xxx, .50—2.

Sodii Bo'ras. *Borax.* gr. v—3 ss, .30—2.

Sodii Bromidum, gr. v—3 i, .30—4.

Sodii Carbonas Monohydratus

gr. x—xxx, .60—2.

Sodii Citras, 3 i—x, 4.—40.

Sodii Bicarbonas, gr. v—3 ss, .30—2.

Pul'vis Efferves'cens Compos'itus, *Seidlitz powder.*

(*White paper 35 grs. Acid Tart., Blue paper*

40 grs. Sodii Bicarb. and 120 grs. Rochelle salt),

Dose, 1—2 powders.

Trochis'ci Sodii Bicarbonatis, 1 = gr. iii.

Sodii Chloras, gr. v—xxv, grm. .30—1.50

Sodii Chlo'ridum. *Salt. As Emetic.* $\frac{3}{4}$ ss—ii, 15.—60.

Sodii Hydroxidum. *Caustic.*

Sodii Hypophosphis, gr. v—xx, .30—1.30

Sodii Io'didum,	gr. v—xxx,	grm. .30—2.
Sodii Nitras,	} Ph. p.	
Sodii Nitris,		
Sodii Phosphas,	gr. xx— $\frac{3}{4}$ ii,	grm. 1.30—60.
Sodii Phosphas Effervescens. <i>Average dose,</i>		
	gr. cxx,	grm. 8.
Sodii Phosphas Exsiccatus		
	gr. x—xx,	grm. .60—1.20
Sodii Pyrophosphas,	Ph. p.	
Sodii Salicy'las,	gr. v—xxx,	.30—2.
Sodii Sulphas. <i>Glauber's salt,</i>	$\frac{3}{4}$ ss—i,	15.—30.
Sodii Sulphis,	gr. xv—3 i,	1.—4.
Sodii Phenol Sulphonas,	gr. ii—v,	.12—.30
Sodii Thiosulphas,	gr. x—xx,	.60—1.20
Liquor Sodii Phosphatis Compositus, <i>Average Dose,</i>		
	3 2	c.c. 8.

Spige'lia.—PINKROOT. *The rhizome and roots of Spigelia marilandica.*

Spige'liæ,	3 ss—ii,	grm. 2.—8.
Fluidextractum Spigeliæ,	3 ss—ii,	2.—8.

Spiri'tus Glycery'lis Nitra'tis.—A 1 per cent. *alcoholi.*
solution of Nitroglycerin. ℥i, grm. .06

Staphisa'gria.—STAVESACRE. *The seed of Delphinium Staphisagria.*

Staphisa'griæ,	<i>External use.</i>	
Fluidextractum Staphisagriæ, <i>Average Dose,</i>		
	℥ i,	c.c. 0.05

* Delphini'na, gr. $\frac{1}{4}$ — $\frac{1}{2}$, grm. .005—.01

Stillin'gia.—**QUEEN'S ROOT.** *The root of Stillingia sylvatica.*

Stillinigæ, gr. x—3 ss, grm. .60—2.

Fluidextractum Stillingiæ, ℥ x—3 ss, .60—2.

Stramo'nium.—**STRAMONIUM LEAVES.** *The leaves of Datura Stramonium.*

Extractum Stramonii, *Average Dose*, gr. $\frac{1}{4}$, grm. .01

Fluidextractum Stramonii, *Average Dose*, ℥ i, .05

Tinctura Stramonii, ℥ v—x, c.c. .30—.60

Unguentum Stramonii.

* **Strontium**—*A metal.*

Strontii Bromidum, gr. x—xxx, grm. .60—2.

Strontii Iodidum, gr. v—xxx, .30—2.

Strontii Lactas, gr. xv—3 i, i.—4.

Strontii Salicylas, gr. x—xx, .60—1.30

Strophan'thus.—**STROPHANTHUS.** *The seed of Strophanthus hispidus.*

Tinctura Strophanthi, ℥ ii—x, grm. .12—.60

Strophan'thinum.—**STROPHANTHIN.** *A glucoside or mixture of glucosides, obtained from strophanthus.*

gr. $\frac{1}{100}$ grm. .0003

Sty'rax.—**STORAX.** *A balsam prepared from the inner bark of Liquidambar orientalis.*

Styracis, gr. v—xx, grm. .30—1.30

Used in Tr. Benzoipi Comp.

* **Sul'phur.**—**SULPHUR.** *Brimstone.*

Sulphur Sublima'tum. *Flowers of Sulphur.*

Sulphur Lotum. *Washed Sulphur. S. Sublimatum*

washed with water, 3 i—iii, grm. 4.—12.

Unguentum Sul'phuris. S. Lotum 3, Benzoinated
Lard 17.

Sulphuris Io'didum, gr. i—iv, grm. .06—.25

Sulphur Præcipita'tum. *Milk of Sulphur.*

3 i—iii, 4.—12.

Sum'bul.—SUMBUL. *The root of Ferula Sumbul.*

Sumbul (*in powder*), gr. viii—xxiii, grm. .50—1.50

Extractum Sumbul, gr. ii—vi, grm. .12—.30

Fluidextractum Sumbul, ℥ xv—xl c.c. 1.—3.

Sulphonethylmet'hanum.—SULPHONETHYLMETHANE. *A product of the oxidation of the mercaptol obtained by the condensation of methylethylketone with ethylmercaptan.* gr. x—xx, grm. .60—1.20

Sulphonmeth'anum.—SULPHONMETHANE. *The product of the oxidation of the mercaptol obtained by the condensation of acetone with ethylmercaptan.*

gr. x—xx, grm. .60—1.20

Supposito'ria Glycerini.—SUPPOSITORIES OF GLYCERINE.

Each to weigh about 45 grms., grm. 3.

Syru'pus.—SYRUP. *Sugar 85 per cent.*

Tal'cum.—TALC. *A native hydrous magnesium silicate.*
Talcum Purificatum.

Tamarind'us.—TAMARIND. *The preserved pulp of the fruit of Tamarindus indica.*

Used for making a drink and in Confection of Senna.

Tarax'acum.—DANDELION. *The root of Taraxacum officinale, gathered in autumn.*

Extractum Taraxaci, gr. xx—3 i, grm. 1.30—4.

Extractum Taraxaci Fluidum

3 i—ii, 4.—8.

Terebe'num.—TEREBENE. *A liquid consisting chiefly of Pinene.*

Terebeni, ℥ v—xx, grm. .30—1.20

Terebin'thina.—TURPENTINE. *A concrete oleo-resin obtained from Pinus palustris, and from other species of Pinus.*

Oleum Terebin'thinæ. *The volatile oil distilled from Turpentine, called Spirits of Turpentine.*

Oleum Terebinthinæ Rectificatum,

℥ v— $\frac{3}{4}$ ss, grm. .30—15.

Emulsum Olei Terebinthinæ, 3 i. c.c. 4.

Linimentum Terebinthinæ.

Terebin'thina Canaden'sis.—CANADA TURPENTINE. *Balsam of fir. Canada Balsam. A liquid oleo-resin obtained from Abies balsamea.*

Terebinthinæ Canadensis, gr. xv—3 i, grm. 1.—4.

Terpi'ni Hydras.—TERPIN HYDRATE.

Terpini Hydratis, gr. ii—xxx, grm. .12—2.

Thy'mol.—THYMOL. *A phenol occurring in the volatile oils of Thymus vulgaris, Monarda punctata, and Carum Ajowan.*

Thymol, gr. ss—ii, grm. .03—.12

Thymolis Iodidum. 45 per cent Iodine.

Tinctu'ræ Herba'rum Recen'tium.—TINCTURE OF FRESH HERBS.

The fresh Herb 50 parts, Alcohol 100 parts.

Tragacan'tha.—TRAGACANTH. *A gummy exudation from Astragalus gummiſer, and from other species of Astragalus.*

Tragacanthæ (in powder), }
Mucila'go Tragacanthæ, } *As vehicle.*

Tri'ticum.—COUCH GRASS. *The rhizome of Agropyrum repens, gathered in spring and deprived of the roots.*

Tri'tici, (in inf. or decoc.), *As demulcent.*

Fluidextractum Triticum, 3 i—3 i, grm. 4.—30

Trituratio'nes.—TRITURATIONS.

The Substance 10 parts, Sugar of Milk 90 parts.

Ul'mus.—SLIPPERY ELM. *The inner bark of Ulmus fulva.*

Ul'mi, *ad libitum.*

Mucila'go Ulmi, *as demulcent.*

U'va Ur'si.—BEARBERRY. *The leaves of Arctostaphylos Uva-Ursi.*

Fluidextractum Uvæ Ursi, 3 i—ii, grm. 4.—8.

Valeria'na.—VALERIAN. *The rhizome and roots of Valeriana officinalis.*

Fluidextractum Valerianæ, 3 ss—i, grm. 2.—4.

Tinctura Valerianæ, 3 i—iii, 4.—12.

Tinctura Valerianæ Ammoniata,
3 i—iii, 4.—12.

Vanil'la.—VANILLA. *The fruit of Vanilla planifolia.*

Tinctura Vanillæ, *For flavoring.*

Vanillinum, *obtained from vanilla or made artificially,*
gr. ss, grm. .030

Veratri'na.—VERATRINE. *A mixture of alkaloids obtained from the seed of Asagrea officinalis.*

Veratrinæ, gr. $\frac{1}{8}$ — $\frac{1}{4}$, grm. .005—.01

Oleatum Veratrinæ, 2 per cent.

Unguentum Veratrinæ, 4 per cent.

Vera'trum.—AMERICAN HELLEBORE. *The rhizome and roots of Veratrum viride.*

Fluidextractum Veratri, ℥ i—v, grm. .06—.30

Tinctura Veratri, ℥ x—xx .60—1.20

Vibur'num O'pulus.—CRAMP BARK. *The bark of Viburnum Opulus.*

Fluidextractum Viburni Opuli,

3 i—ii, grm. 4.—8.

Vibur'num Prunifo'lium.—BLACK HAW. *The bark of Viburnum Prunifolium.*

Fluidextractum Viburni Prunifolii,

℥ xv—3 i, grm. 1.—4.

Xanthox'yllum.—PRICKLY ASH. *The bark of Xanthoxylum americanum and of Xanthoxylum Clava-Herculis.*

Fluidextractum Xanthoxyli, 3 ss—i, grm. 2.—4.

Zea.—CORN-SILK. *The styles and stigmas of Zea Mays.*

Zincum.—ZINC. *A bluish-white metal.*

Zinci Ace'tas. *Astringent.*

Zinci Bromidum, gr. i—v, grm. .06—.30

Zinci Chlo'ridum. *Caustic and astringent.*

Liquor Zinci Chlo'ridi *External use*

Zinci Carbonas Præcipita'tus. *Ph. p. and external use.*

Zinci Iodidum,	gr. i—v,	grm. .06—.30
Zinci Oxidum,	gr. i—v,	.06—.30
Unguentum Zinci Oxidi,	20 per cent.	
Zinci Phenolsulphonas,	gr. ii,	.12
Zinci Stearas.		
Zinci Sulphas.	<i>White Vitriol. Emetic,</i>	
	gr. x—xxx,	.60—2.
Zinci Valeras,	gr. ss—iii,	.03—.20
Unguentum Zinci Stearatis.		

Zin'giber.—GINGER. *The rhizome of Zingiber officinale.*

Zingib'eris,	gr. v—xv,	grm. .30—1.
Oleoresina Zingiberis,	℥ ss—ii,	.03—.10
Fluidextractum Zingiberis,	℥ v—xv,	.30—1.
Tinctura Zingiberis,	℥ xx—3 i,	1.30—4.
Syrupus Zingiberis.	<i>As vehicle.</i>	
Pulvis Aromaticus,	gr. x—xxx,	.65—2.

CHAPTER VIII.

THE METRIC SYSTEM.

The convention for the seventh decennial revision of the U. S. Pharmacopœia, which met in Washington in May, 1890, adopted, as the official system of weights and measures for the Pharmacopœia, the French or Metric System. This system, possessing so many advantages peculiar to itself, is, by virtue of its being now official, likely to come more speedily into general use. Therefore an acquaintance with it is necessary to every educated physician.

This system has as its unit the Meter (= 39.37 inches), which is the ten-millionth part of the distance from the pole to the equator. From this as a basis, all other measures and weights are formed. The system is arranged on the decimal scale; that is, all the divisions are

connected by the same way as the coin system. The names divisions and multiples each case by a certain Latin or Greek, which of the unit. They are

For Smaller

Latin { Milli (from Mille) in
Centi (" Centum)
Deci (" Decem)

For Much

Greek { Deca (from Δεκα) in
Hecto (" ἑκατομ)
Kilo (" χίλιος)
Myria (" μυριάς)

The

<i>Weight.</i>	<i>Length.</i>
Gram.	Meter.

* I have adopted the the recommendation of This has been done also in the National Dispensary "English" than Gram convenient

the way
this would
grams;
and cents,
read 21
a matter
and kilo-
the

prescrip-
know the

sole affair
cal-
when the
simpli-

we desire to
want Aloes
Belladon.
previous

in the U. S.
precede

It is the custom in all countries where the metric system is used in writing prescriptions to express all quantities by weight, fluids as well as solids being expressed in this way. As the system is used in Europe we have only to do then with the *gram* and its decimal divisions, that being the name given to the unit of weight.

A GRAM is the weight of one cubic centimeter of water at 4° C.* The subdivisions of the gram are the Milligram, Centigram, and Decigram.

1 Gram = the weight of 1 c.c.† of water at 40 C. written 1.	
1 Decigram = $\frac{1}{10}$ of a Gram	" .1
1 Centigram = $\frac{1}{100}$ " " "	" .01
1 Milligram = $\frac{1}{1000}$ " " "	" .001

In practice the decigram is disregarded, and everything expressed in terms of grams and centigrams; in the same way as we disregard our dimes and express every thing in terms of dollars and cents. The milligram is commonly used when we have to do with a certain number

* Water is taken at this temperature because it is then at its greatest density, 4° C. = 39° Fahr.

† C.C. is the sign for cubic centimeter.

all medicines by weight, but our patients, not having any scales and weights at hand, must continue to divide out the doses, as of old, by volume, viz.: by the traditional teaspoonful, etc. Now a given bulk, say 1 c.c., of Chloroform weighs nearly double the same volume of Ether; so that the relations between a given weight of fluid and a teaspoonful change with the specific gravity of the fluid. This fact must be constantly borne in mind, in calculating the total bulk of the mixture. A teaspoonful or fluid drachm of water weighs 3.75 grams, while a fluid drachm of Chloroform weighs nearly 5.50, and a fluid drachm of Ether only 2.80. Most of the official liquid preparations, which are intended for internal administration, such as the liquors, dilute acids, waters, etc., do not materially differ in bulk from the same weight of water: in other words, their specific gravity is the same. This also applies to the tinctures which are made with diluted alcohol, and to most of the Fluid extracts.

The spirits, the tinctures made with alcohol, and the fixed and volatile oils are somewhat lighter; so that the same weight is a little more

bulky. This difference is so slight, being only 10 centigrams in each cubic centimeter, or $\frac{1}{10}$ that it may generally be disregarded, unless the bulk of a mixture is composed of them. In that case $\frac{1}{10}$ less by weight will give the same bulk as the same weight of water.

This leaves only a few substances or preparations which can cause any difficulty; they are Ether, the Compound Spirits of Ether, the Spirits of Nitric Ether, Glycerine, the Syrups, and Chloroform. Ether has a specific gravity of .728, so that 3 parts by weight occupy about the same space as 4 parts by weight of water. It should be remembered, however, that when mixed with equal parts of water it loses $\frac{1}{8}$ its bulk. The specific gravity of Spts. $\frac{1}{8}$ Ether Co. is .815 and of Spts. Ether Nitrosi .825, so that 4 parts by weight of either occupies about the same space as 5 parts of water. In Glycerine the specific gravity is 1.25, so that the relation of weight to volume is as 5:4; the Syrups, specific gravity of 1.317, have the relation of 4:3; and Chloroform, having the specific gravity of 1.49, is nearly as 3:2.

In prescribing them, if we wish to get a bulk of any of these drugs equivalent to that of a given weight of water, we must order by weight of

TABLE.

Spirits, Tinctures, and Oils,	$\frac{9}{10}$	or	$\frac{1}{10}$	less	} than the weight of the same bulk of water.	
Stronger Ether,	$\frac{3}{4}$	"	$\frac{1}{4}$	"		
Spirit of Nitric Ether,	}	$\frac{1}{2}$	"	$\frac{1}{2}$		"
Comp'd Spirit of Ether,						
Glycerine,	$\frac{2}{3}$	"	$\frac{1}{3}$	"		
Syrups,	$\frac{1}{2}$	"	$\frac{1}{2}$	"		
Chloroform,	$\frac{2}{3}$	"	$\frac{1}{3}$	"		

If the weight is given and we wish to estimate the bulk, then we must use the fractions in the first column, *but inverted*. If for instance we wish to make up a prescription already containing 50 grams to a bulk equivalent to 100 grams of water (100 c. c.) by the addition of glycerine, then we must add not 50, but 60, ($\frac{2}{3}$ of 50) grams of the glycerine. If on the other hand we have a prescription containing 50 grams of glycerine and we desire to make up the bulk to 100 c.c. by the addition of water, we must count the glycerine as only 40 c.c. ($\frac{2}{3}$ of 50), and consequently add 60 grams of water.

The difficulties which these computations involve are more apparent than real. Ether and its compound spirit are almost never prescribed as parts of a mixture, being generally ordered alone, or at most mixed with a considerable bulk of water, in which they may be counted as of equal specific gravity. Chloroform also is rarely prescribed except alone, or as part of a mixture for external application, it being generally ordered for internal administration in the form of the spirit, which differs little in sp. gr. from water. The difference in the case of sweet spirit of nitre is so slight that, for small quantities, it may be disregarded. The same is true in the case of the spirits, tinctures and oils. This leaves only glycerine and the syrups; and a very little practice will enable the prescriber to make the proper allowance for these two preparations.* Salts in solution may be regarded as about the equivalent of $\frac{1}{2}$ to $\frac{1}{3}$ their weights of water (Maisch). This need only be taken into account when relatively very large quantities are ordered.

* See note, page 200.

The following *illustrations* will aid in understanding these rules. Suppose it is required to write for a mixture to contain in each tablespoonful dose, Acid. Phosphor. Dil., .60; Spts. Chlorformi, .60; Tr. Ferri Chlor., .50, and Infus. Quassiaë, as a vehicle. Here as before we must first decide on how large a mixture is desirable. Bottles can now be had which hold exactly 25, 50, 100, 200, etc., cubic centimeters, so that it is much better and more in consonance with the metric system, more "metrical," if we may be allowed the expression, to regulate the bulk of our prescriptions according to these bottles, instead of the old-style bottles, and so drop all appearances of a dependence on the old system. As the dose in the example before us is large, we may order a large mixture, say 200 grams. As a tablespoon holds about 20 grams (of water), this will give just 10 doses. Hence we shall have 6 gm. each for the acid and spirit; 5 gm. for the tincture, and then the mixture can be ordered to be made up to 200 gm. or c.c., by the addition of the infusion, thus:

R.	Gramma.
Acid. Phosphor. Dil.,	
Spiritus Chloroformi,	\overline{aa} 6.
Tr. Ferri Chlor.,	5.
Infus. Quassiæ,	<i>ad</i> 200.
M. Sig.—Dose, one tablespoonful.	

The form of writing with *ad** is not generally applicable to the metric system, but may be used when all the ingredients are fluids, and of the same specific gravity.

As another example, let us write for a liniment to contain equal parts of Tr. of Belladonna, Tr. of Aconite, Chloroform and Glycerine. The proper amount for a liniment is generally 100 grams. We should order then 25 of each of the tinctures, 38 ($25 + \frac{1}{2}$ of 25) of Chloroform and 30 ($25 + \frac{1}{4}$ of 25) of Glycerine, thus:

* It has been suggested that the pharmacist might be ordered, after having weighed all the other articles and put them in, to make up the whole mixture to a certain bulk, or number of cubic centimeters. This plan has its advantage, and has been adopted by some. It will apply to any mixture.

R.	Gramma.
Tinct. Aconiti,	
Tinct. Belladonnæ, aa	25. = 50 c.c.
Chloroformi Purificati,	38. = 25 "
Glycerini,	30. = $\frac{25}{100}$ "

Sig.—For external use only.

The true amount of the Chloroform would be 37.50, but in cases where the fraction is small and in cases of inert substances in large quantities it is customary to "round off," and either not to take notice of the decimals at all, or if they come to five or more to make it up to the unit.

Again, suppose a mixture is desired which will contain Quin. Sulph. .20 and Tr. Ferri Chlor. .60, in a dose, with oil of peppermint to flavor it, and glycerine and water as vehicles. If a mixture of the amount of 100 grams is decided upon, there will be just 20 doses, as a teaspoon holds about 5 grams.* This will give 4. of quinine and 12. of

* This is nearer the truth than the fiction that a teaspoon holds just a drachm or 4 grams. Teaspoons, of course, vary very much, but most of those of modern make hold only a little more than 5. c.c.

iron; .05 to each 25. is quite enough of the oil, which gives, say, .20 for the mixture of 100. The proper amount of glycerine would be one-half of the remainder by bulk. If we count the quinine as 3. in bulk, and disregard the oil, this would leave just 85 c.c. to be filled up, which would be done by 50. ($40 + \frac{1}{4}$ of 40) of glycerine and 45. of water.

R.	Gramma.
Quininæ Sulphatis,	4.
Tr. Ferri Chloridi,	12.
Ol. Menth. Pip.,	.20
Glycerini,	50.
Aquæ,	45.

M. Sig.—One teaspoonful three times a day.

To illustrate the use of preparations lighter than water, let us take the following:—

Write for a mixture to contain in each dose of a tablespoonful, Potas. Acetat., .60; Spts. Æther Nit., .80; Tr. Scillæ, .25, and the rest Infus. Scoparii. Taking the quantity desired as 200 grams, there would be 10 doses, which would give 6. for the potash, 8. for the nitre,

and 2.50 for the squills. In estimating the bulk we must count the sweet spirit of nitre as 10. ($\frac{1}{4}$ of 8), which would give a total of 18, leaving 182 grams of the infusion.

R.	Gramma.
Potas. Acetat.,	6.
Spts. Æther. Nit.	8.
Tr. Scillæ,	2.50
Infus. Scoparii,	180.

M. Sig.—Dose, a teaspoonful.

A more difficult example is as follows:—
Write for a mixture to contain, Chloroform, .30, and Fluidextract of Wild Cherry, .70, in a teaspoonful dose. One-fourth of the whole to be of Glycerine and the rest of Syrup of Tolu. We will choose 50 grams as the total, giving just 10 doses. Multiplying this and rounding off we have 3. for the chloroform and 7. for the fl. ext. For the glycerine we should have, say 15 ($\frac{1}{4}$ of 12.50 = 15.60). This would give a bulk of 2. c. c. for chloroform ($\frac{1}{3}$ of 3.), 7. for the fluidextract, and 12. for the glycerine ($\frac{1}{4}$ of 15), total, say 20. To make up the bulk to 50. (c.c.)

then, we want a bulk of syrup the equivalent of 30 grams of water, or about 40. ($\frac{4}{3}$ of 30 = 40) grams.

R.	Gramma.
Chloroformi,	3.
Fluidextractum. Pruni. Virgin.	7.
Glycerini,	15.
Syr. Tolutani,	40.
M. Sig.—Dose, one teaspoonful.	

VOLUMETRIC SYSTEM.—The plan of prescribing which is most in harmony with the new U. S. Pharmacopœia, and which has been generally adopted in this country, is to disregard the differences of specific gravity by directing that fluids be measured as in the old system. This requires simply placing the terms “Gram or cubic centimeter” above the quantities of the ingredients or after each ingredient separately as in the examples below. By this plan the two examples preceding the last one would appear as follows:

R. Gramma vel c.c.

Quininæ Sulphatis,	4.
Tr. Ferri Chloridi,	12.
Ol. Menth. Pip.,	.20
Glycerini,	40.
Aquæ,	45.

M. Sig.—One teaspoonful three times a day.

R.

Potas. Acetat.,	6. grm.
Spts. Æther. Nit.,	10. c.c.
Tr. Scillæ,	2.50 c.c.
Infus. Scoparii,	180. c.c.

M. Sig.—Dose, a teaspoonful.

This plan requires no calculation in view of difference of specific gravity, and it further permits the compounder to follow the more common custom of measuring liquids.

THE METRIC IN ITS RELATIONS TO THE APOTHECARIES' SYSTEM.

Thus far nothing has been said of the relations which the Metric System bears to the system

of Troy weights and Wine measures. The object has been to teach the student to write in the new system independently of the old; to think in it; to use it as a system complete in itself and not merely as a periphrase of the other. The student who begins in this way, and who learns the doses in both systems, will never meet with the difficulties which are opposed to the progress of the practitioner, or the student who has already familiarized himself with the old way only. For the sake of the latter class there are here appended rules for the conversion of either system into the other.

Conversion of Apothecaries' weights and measures into grams. For all practical purposes it may be considered that one gram is equal to 15 grains Troy (more exactly 15.432). Therefore we get the following approximations: *

* In changing to quantities under 5 grs. the grain may be considered as equal to .06, but in larger quantities it is much better to consider it as .065. If this is not done in very large quantities the error becomes quite considerable.

Gr. i. =	.06 Grams, exactly	.06479
℥i. =	1.30 " "	1.2958
3i. =	4. " "	3.8874
℥i. * =	31. " "	31.103

So that in changing from the old into the new we should put .06 for each grain, 4. for each drachm, and 31. for an ounce.

From these facts may be very easily deduced the following

RULES† FOR EXPRESSING QUANTITY BY WEIGHT
OF THE APOTHECARIES' SYSTEM
IN METRIC TERMS.

Rule A.—Reduce the quantity to grains and divide by 15. The quotient is in each case the number of grams representing (nearly) the same quantity.

Rule B.—Reduce each quantity to drachms and multiply the number by 4. The product is in

* The Avoirdupois ounce is equal to 28.35 grams.

† Fourth Annual Report of the Surgeon General, 1887, with modifications.

each case the number of grams representing (nearly) the same quantity.

Rule C.—Reduce each quantity to ounces and multiply the number by 31. The product is in each case the number of grams representing (nearly) the same quantity.

In changing *fluid measures to grams* we may employ the same rules to get results accurate enough for all practical purposes. But if greater exactness is required it must be remembered that one gram of water measures about 16 minims (exactly 16.231), consequently (one fluidounce of water weighing 455.7 grs.), we have,

1 ℥	=	.06 Grams, exactly	.0616
1 f. 3	=	3.75 " "	3.696
1 f. 3	=	30. " "	29.576

In changing we may put .06 for each minim, 3.75 for each drachm, and 30. for each fluid ounce, provided of course that the specific gravity is the same, or nearly the same, as that of water. The rules on the previous page would then apply to fluids if we substitute

minims for grains, fluidrachm for drachm, and fluidounce for ounce, and also, where greater exactness is required, substitute 16 for 15, 3.75 for 4, and 30 for 31.

If the specific gravities differ much from that of water, due allowance must be made according to the rules already given.

As a means of ready reference, to save the trouble of applying the rules, the following table, prepared by Prof. Maisch, will be found of value. Ether, Chloroform, the two extremes, are hardly included in the list, unless for small quantities, where the errors would be immaterial. (See opposite page.)

A few examples will illustrate the application of these rules. Take, for instance, the prescription on page 69 to be converted into the metric system, and we should have by the application of rule A the following:—

R.	Gramma.
Ext. Nuc. Vom.,	gr. vi. = .40
Pulv. Scammon.,	gr. xii. = .80
Pulv. Aloës,	

TABLE FOR CONVERTING APOTHECARIES WEIGHTS
AND MEASURES INTO GRAMS.

TROY WEIGHT.	METRIC.	Apotheca- ries Meas- ure.	GRAMS FOR LIQUIDS.		
	Grams.		Lighter* than wa- ter.	Specific Grav†. of water.	Heavier‡ than water.
℥	.001	1 Minims	.055	.06	.08
℥ss	.0015	2	.10	.12	.15
℥ss	.002	3	.16	.18	.24
℥ss	.003	4	.22	.24	.32
℥ss	.004	5	.28	.30	.40
℥ss	.005	6	.32	.36	.38
℥ss	.006	7	.38	.42	.55
℥ss	.008	8	.45	.50	.65
℥ss	.010	9	.50	.55	.73
℥ss	.016	10	.55	.60	.80
℥ss	.02	15	.80	.72	.96
℥ss	.03	16	.90	1.00	1.32
℥	.065	20	1.12	1.25	1.60
℥	.13	25	1.40	1.55	2.00
℥	.20	30	1.70	1.90	2.50
℥	.26	35	2.00	2.20	2.90
℥	.32	40	2.25	2.50	3.30
℥	.39	48	2.70	3.00	4.00
℥	.52	50	2.80	3.12	4.15
℥	.65	60 (f 3 i.)	3.40	3.75	5.00
℥	1.00	72	4.00	4.50	6.00
℥ (3 i.)	1.30	80	4.50	5.00	6.65
℥	1.50	90	5.10	5.60	7.50
℥	1.62	96	5.40	6.00	8.00
℥	1.95	100	5.60	6.25	8.30
℥	2.60	120	6.75	7.50	10.00
℥	3.20	160	9.00	10.00	13.30
℥ (3 i.)	3.90	180	10.10	11.25	15.00
℥ (3 ii.)	7.80	240 (f 3 ss.)	13.50	15.00	20.00
℥	11.65	f 3 v.	16.90	18.75	25.00
℥	15.50	f 3 vi.	20.25	22.50	30.00
℥	19.40	f 3 vii.	23.60	26.25	35.00
℥	23.30	f 3 i.	27.00	30.00	40.00
℥	27.20	f 3 ii.	54.00	60.00	80.00
℥	31.10	f 3 iii.	81.00	90.00	120.00
℥ ii.	62.20	f 3 iv.	108.00	120.00	160.00
℥ iv.	124.40	f 3 v.	135.00	150.00	200.00
℥ vi.	186.60	f 3 vi.	162.00	180.00	240.00
℥ viii.	248.80	f 3 viii.	216.00	240.00	320.00

* Lighter than water are tinctures, spirits, Comp'd Spts. of Ether, Sweet Spirits of Nitre, and fixed and volatile oils. Æther fortior is not included.

† Same as water are waters, liquids, decoctions, infusions, most fluidextracts and tinctures made with dilute alcohol. (Compare page 174.)

‡ Heavier than water are syrups, glycerine, a few fluidextracts and chloroform, which is hardly included.

Pulv. Rhei, \overline{aa} gr. ix. = .60

Alcohol, q. s. q. s.

M. Div. in Pil. xii.

Again, take the mixture on page 74.

R Gramma.

Quin. Sulphat., gr. xvi. 1.

Strych. Sulphat., gr. ss. .03

Acid. Hydrochlor. Dil., \mathfrak{m} lxxx. 5.

Tr. Zingiberis, 3 ii. 7.50

Tr. Card. Co., 3 iiss. 9.50

Syrupi, $\frac{3}{4}$ ii. 80.

Aquam, ad $\frac{3}{4}$ iv. 40.

M. Sig. Dose, a tablespoonful.

Here the 16 grains may very correctly be rounded into one gram; as one ~~gram~~ ^{grain} is .06 one-half will be .03; 80 minims will be 80 divided by 16, or 5.; two fluid drachms would be just 7.50 and two and a half would be 9.50.; the two fluid-ounces of syrup would be $\frac{4}{5}$ of 60 = 80. The total of these is 82, viz., 5 + 7.50. + 9.50. + 60., and would leave 38. of water. The 80. grams of syrup would count in bulk, it must be remembered, the same as two ounces of water, that is, as 60. In translating formulæ a suffi-

ciently accurate result is arrived at, and a true decimal or metric prescription is produced, by considering each grain as equalling .05 gm., and each ounce 25. gm. While the relative proportions are thus pretty accurately preserved, the translation is facilitated.

TABLE.

<i>Metric Weights.</i>	<i>Exact Equivalents</i>	<i>Approximate</i>
	<i>in grains</i>	<i>Equivalents in</i>
		<i>grains.</i>
.001	= .0154	= $\frac{1}{65}$
.002	.0308	$\frac{1}{32}$
.003	.0463	$\frac{1}{22}$
.004	.0617	$\frac{1}{16}$
.005	.0771	$\frac{1}{13}$
.006	.0926	$\frac{1}{11}$
.007	.1080	$\frac{1}{9}$
.008	.1234	$\frac{1}{8}$
.009	.1389	$\frac{1}{7}$
.01	.1543	$\frac{1}{6}$
.02	.3086	$\frac{1}{3}$
.03	.4630	$\frac{2}{11}$
.04	.6173	$\frac{1}{11}$
.05	.7717	$\frac{2}{11}$
.06	.9260	$\frac{3}{10}$
.07	1.0803	1
.08	1.2347	$1\frac{1}{4}$
.09	1.3890	$1\frac{1}{5}$

Metric Weights. Exact Equivalents in grains. Approximate Equivalents in grains.

.10	=	1.543	=	1½
.20		3.086		3
.30		4.630		4½
.40		6.173		6
.50		7.717		7½
.60		9.260		9
.70		10.803		11
.80		12.347		12½
.90		13.890		14
1.00		15.432		15
2.00		30.864		3 ss
3.00		46.296		℥ii
4.00		61.728		3 i.
5.00		77.160		℥iv.
6.00		92.592		3 iss.
7.00		108.024		℥vss.
8.00		123.456		3 ii.
9.00		138.888		℥vii.
10.00		154.320		3 iiss.

AIDS TO THE ADOPTION OF THE METRIC SYSTEM.

Every beginner in medicine should master the metric system so as to be able to think and calculate in it as easily as in any other system. The student who has never written prescriptions in the old systems has the advantage of not being obliged to unlearn or depose the latter,

and he should therefore, by a little hard study, make the new system his own. In order to acquire a practical familiarity with the decimal system the student should group the doses of commonly-used medicines and adopt for each group a convenient approximate metric equivalent; for example, the dose of Strychninæ Sulphas, Hydrarg. Chloridum Corrosivum, Acidum Arsenosum, and a number of other powerful agents, may be stated as $\frac{1}{80}$ to $\frac{1}{20}$ of a grain. In metric terms their dose would be .001 to .003 (one to three milligrams). From this carry in mind *one milligram* as the starting-point for the group. So, with the group having one grain as the dose, adopt as the convenient metric dose .05 (five centigrams), etc. The main idea should be to adopt the working dose that will be most convenient in calculation after the mind has dismissed entirely the grain, the drachm, etc., although it may differ materially from the exact dose in the old system.

To those who have used the old system for a long time the matter of adopting the Metric System is more difficult. The main difficulty,

however, is that of indifference toward the new system. Indeed, we find comparatively few physicians now in practice who will subject themselves to the task of mastering this system, which they know to be superior. For those who are obliged, from long usage, to do their thinking in the old system, the rule given below will be found very useful. It is based upon the relation between the grain and gram, and it does away entirely with the necessity of multiplying in the determination of quantities.

RULE.—Make the whole quantity to consist of sixteen doses; then, the number that represents the single dose of an ingredient in grains or minims, will express the required quantity of that ingredient in grammes or cubic centimeters.*

For example:

\mathcal{R}	Gramma vel c.c.
Potassii Bromidi (single dose 10 grains)	10.
Morphinæ Sulphatis (single dose $\frac{1}{4}$ grain)	.25

* From an article on "Aids to the Adoption of the Metric System in Prescription Writing," in the *Medical News*, Philadelphia, March 25, 1893.

Spiritus Ætheris Nitrosi (single dose 30 min.)	30.
Aquæ q. s. ad (16 teaspoonful doses)	80.
M. Sig., etc.	

In prescribing powders or pills the same rule applies as for fluids—for example:

R	Gramma.
Pulv. Ipecacuanhæ et Opii (single dose 5 grs)	5.
Pulv. Digitalis (single dose 1 grain)	1.
Strychninæ Sulphatis (single dose $\frac{1}{10}$ grain)	.02
Misce et divide in chartulas numero xvj.	

The ordering of fifteen or sixteen doses always establishes the relation between the two systems.

THE ADVANTAGES OF THE METRIC SYSTEM.

The question will arise in the mind of every student: What are the advantages of the metric system, and will it pay to learn, and to use it?

The latter question may be very readily answered, in part at least, in the affirmative. It certainly will pay every medical student to thoroughly master and familiarize himself with

this system. For it is possible that, within the natural lifetime of every one who from this time forth shall study medicine, the metric system will be the "law of the land," and its use compulsory.

If this is to be the case, then the period of student life, before the old style has become ground in by long use, has become a second nature, as it were, is the time most fitted for its reception. That it should be learned to the exclusion of the old method is certainly not advisable. The two should be studied side by side, neither to the exclusion of the other. Another reason why it should be learned is that it is fast coming into use in American medical literature, and is the only style found in *any* foreign literature except the English.

Those who accustom themselves to its use will find it so much simpler that they will doubtless prefer to use it altogether. This can now be done in most of our large cities, where the best pharmacists are supplied with the requisite weights and measures, as is constantly done by a number of our New York and by many Boston

physicians. In the country, or in small places where the physician must dispense his own drugs, there is nothing to hinder its use and everything in its favor; the method of dispensing, especially in the case of fluids, is so much simpler and neater as to recommend itself at once. Perhaps a few hints on this point may not be out of place. Put the bottle in the scale and balance it with shot, a dish of which can always be kept handy; then put in one of the desired weights, pour in the preparation until it balances, then another and so on. When done in this way there is no waste, no dirty graduates to wash; and a very little practice will enable the dispenser to make up the prescription in this way with an exactitude unattainable by the old mixed system of weights and measures.

There are certain inherent advantages which the metric system possesses. In the first place it is a decimal system. We all of us appreciate the advantages of decimals from our familiarity with them in our monetary system. We would be very loth to go back to the complicated English system of pounds, shillings and pence.

Again, it uses the Arabic instead of the less familiar and less convenient Roman numerals. It does away with the symbols of the different units, and thus reduces the chances of mistakes from carelessly made signs. It also gives a like unit for both solids and fluids. Again, "it provides denominations of weights applicable to the smallest quantities which the physician or pharmacist can be called upon to prescribe or dispense; the old grain being by far too large a unit for the measurement of the alkaloids and glucosides which modern chemistry has added to our *Materia Medica*."* Another advantage is derived from the convenience in altering formulæ, when it is desirable to change the quantity of the active ingredients, the quantity of the menstrum and dose being the same.† Other advantages are, that there is here a nomenclature which is self-defining and expressive of values, and that the base of the whole system is unalterable.


Another very considerable gain to be derived

*Dr. T. B. Curtis, Boston, *Med. Surg. Jl.*, Dec. 6, 1877.

†E. Wigglesworth, Louisville, *Med. News*, April, 1878.

from the adoption of the metric system, by the profession as a whole, is the uniformity thus secured. Our present system is uniform with none, not even with the English, for the English weights and measures, while having the same names as ours, have quite different values, as has already been explained. On the other hand the metric system has been adopted by nearly all the different countries on the continent of Europe, and in America by Mexico and by many of the South American republics, so that its adoption would bring us into agreement with nearly the whole civilized world.

Another advantage which we can fully enjoy now that our Pharmacopœia is arranged in conformity with the decimal system is the appreciation of quantitative ratios in different formulæ and the resulting preparations. Let us take Fowler's Solution (T. B. Curtis), as prepared according to the formula of the French Codex. It contains Arsenous Acid, 5 grams; Carbonate of Potassium, 5 grams; distilled water, 500 grams; Alcohol, 15 grams. When fully prepared, and after boiling, it weighs just 500 grams; and thus



contains one one-hundredth of its weight of arsenous acid. Of course the amount of acid in any given weight of liquid is easily recognized.

In the preparation of solutions the above advantage, in relation to percentage strength, is likewise apparent.

The following tables, although but little used in prescription writing, will be found of use to those interested in the subject. In order to accustom one's self to metric measure, it will be well to remember that the U. S. "nickel" five cent piece weighs five grams, and is two centimeters in diameter.

METRIC MEASURES OF LENGTH.

1 Millimeter	0.001 = .039 inches
1 Centimeter	0.01 = .393 "
1 Decimeter	0.1 = 3.937 "
1 Meter	1. = 39.370 " = 3.28 feet = 1.1 yd.
1 Kilometer	1000. = .62 miles.

1 Inch	= 25.4 Millimeters.
1 Foot	= .3048 Meters.
1 Yard	= .9144 "
1 Mile	= 1.61 Kilometers.

MEASURE OF CAPACITY.

1 Milliliter	=	1. c.c.	=	f 3 .27
1 Centiliter	=	10. "	=	f 3 2.70
1 Deciliter	=	100. "	=	f 3 3.38
1 Liter	=	1000. "	=	2.1 Pints = .264 Gal. = .11 Pecks.
1 Hectoliter			=	2.8 Bushels.

1 Fluidrachm	=	3.7	c.c.
1 Fluidounce	=	29.57	"
1 Pint	=	.473	Liters.
1 Gallon	=	3.78	"
1 Peck	=	8.8	"
1 Bushel	=	35.	"

MEASURES OF SURFACE.

1 Centiare	=	1 Sq. Meter	=	10.7	Sq. Ft.
1 Are	=	100 " Meters	=	119.6	Sq. Yds.
1 Hectare	=	10,000 " "	=	2.47	Acres.

SOLID MEASURE.

1 Decistere	=	.1 Cubic Meter	=	3.5	Cubic Feet.
1 Stere	=	1. " "	=	35.317	Cubic Feet.
1 Decastere	=	10. " "	=	13.	Cubic Yards.

TEMPERATURE.

36° Centigrade	96°.8	Fahrenheit.
37°	"	.	.	.	98°.6	"
38°	"	.	.	.	100°.4	"
39°	"	.	.	.	102°.2	"
40°	"	.	.	.	104°.	"
41°	"	.	.	.	105°.8	"
42°	"	.	.	.	107°.6	"

Cent.		Fahr.	Cent.		Fahr.
1°	=	1°.8	6°	=	10°.8
2°	=	3°.6	7°	=	12°.6
3°	=	5°.4	8°	=	14°.4
4°	=	7°.2	9°	=	16°.2
5°	=	9°.			

To change C. into F., use the table and add 32. To change F. into C., subtract 32 and use the table; or, multiply C. by 1.8, add 32 = F.

Note.—To test the influence of Salts in solution on bulk, the following experiments were made: 4 grams of certain substances were dissolved in 10 c.c. of water, or in the case of Quinine, dilute acid, and the increase in bulk of the solution noted, with the following results: Pot. Iodid. increase 1.2 c.c., Pot. Bromid, 1.2, Pot. Carb. 1.4, Pot. Bicarb. 1.5, Pot. Cit. 1.7, Am. Bromid. 1.9, Ferri. Sulph. 2, Chloral 2.2, Ferri. Am. Cit. 2.2, Pot. Acetat. 2.3, Am. Carb. 2.4, Sach. Alb. 2.4, Am. Chlorid. 3., Quin. Sulph. 3.1. For these experiments I am indebted to Mr. Joseph Clowry, Asst. Apothecary to the N. Y. Dispensary.

CHAPTER IX.

MEDICINAL COMBINATIONS.

The tendency in modern therapeutics is unquestionably towards simplicity in prescriptions. Few modern formulæ contain more than one or two active agents. To give as little medicine as possible is a rule popular with a large and very influential part of the profession. Without seeking to trace out the causes of this tendency, may we not well ask if there is not danger of its often carrying us too far? Is not this simplicity sometimes gained at the expense of our patients, and if so, is it not sometimes due to an ignorance both of the action of remedies, and of the proper methods of combining them? There can be no doubt but that a judicious combination will often produce effects for good, which might be sought in vain from

the use of any one remedy alone. From these considerations we feel justified in introducing this chapter in a book on prescription writing.

Every writer on this subject for the last fifty years has drawn largely from the writings of Dr. John Ayrton Paris. His method of presenting the subject is so clear and perfect that it has never been improved upon. Like several others, I shall content myself with giving a fair and full abstract of Dr. Paris's teachings.

The objects which Dr. Paris* declares are to be sought in combining medicines may be considered under five heads.

I. TO PROMOTE THE ACTION OF THE BASIS.

A. By combining the several different forms or preparations of the same substance.—As when an infusion is strengthened by the addition of a fluidextract or tincture, in cases where all the active principles are not soluble in the same vehicle; Digitalis may be taken as an example, all the active principle not being soluble in water. Another example is Brown-Sequard's "epilepsy mixture," where two bromides are combined.

* Paris Pharmacologia, 1st Amer. Ed.



B. By combining the basis with substances which are of the same nature.—That is substances which are individually capable of producing the same effect but with less energy than when combined. This is but the law laid down by Dr. Fordyce, “that a combination of similar remedies will produce a more certain, speedy, and considerable effect than an equivalent dose of any single one.” Many illustrations of this rule might be given; for example, the combination of chloral and bromide of potassium is more certain as an *hypnotic* than either one alone. This rule is very generally followed in the case of *cathartic* medicines, particularly those of the more active class. Not only is the combination in this case more active but it is also more manageable and less liable to irritate. Some cathartics, like Gamboge, are never given alone. The class of *Diuretics* is another in which great advantages are to be derived from combinations. Their uncertain powers are thus rendered much surer. *Aromatics* also are very generally combined, when their special action alone is sought. Nearly all “carminatives” have a large number

of ingredients. *Expectorants* also are very generally combined in the same prescription, as in the famous "Stoke's Expectorant."

C. By combining with the basis substances of a different nature, which do not exert any chemical influence upon it, but in some unknown way increase its power.—A commonly given example of this is the increased diuretic power of Squills when combined with Calomel. The combination of Opium, Capsicum, and Quinine to break an intermittent, and other examples, will readily suggest themselves.

2.—TO CORRECT THE OPERATION OF THE BASIS
BY OBVIATING ANY UNPLEASANT EFFECTS
IT MIGHT BE LIKELY TO OCCASION AND WHICH
MIGHT PREVENT ITS INTENDED ACTION.

A. By chemically neutralizing or mechanically separating the offending ingredients.—Scammony may be deprived of its acrimony by triturating it with milk and other substances such as mucilage, barley water, etc.

B. By adding some substance calculated to guard against its deleterious influence.—For

instance, the Oxide of Zinc is recommended for some forms of diarrhoea, but if it meets with an acid in the stomach, the resulting compounds may be very irritating. To prevent this it is exhibited in combination with an alkali. The dilution of strong alcoholics, and other irritants, by water or other suitable diluents, is another ready illustration. The constipating effect of Opium may be obviated by Aloes, while the unpleasant after effects may be greatly reduced by Belladonna. The griping tendency of most purgatives may be prevented by a combination with aromatics. The same tendency in Senna is overcome by exhibiting it with a saline, as in the "Black Draught."

3. TO OBTAIN THE JOINT ACTION OF TWO OR MORE MEDICINES.

A. By uniting medicines which are calculated to produce the same ultimate results, but by modes of operation totally different.—The combination of members of the different classes of cathartics is sufficiently familiar. Some act by increasing peristalsis, others by preventing absorption, and others by increasing the secretions, and yet all

produce the same ultimate results when combined. The same is true in the case of emetics. Some act directly on the stomach and some on the nerve centers. If severe and certain emesis is desired it can best be obtained by a simultaneous exhibition of members of each group. The combination of Buchu and a salt of Potash in the uric acid diathesis is also a good example of the advantages to be derived from combinations of this kind.

B. By combining medicines which have entirely different powers, and which are required to obviate different symptoms, or to assume different indications.—Under this head will come the greatest number of medicinal combinations. The desire to combat many different symptoms by a multitudinous combination has often led to ridiculous excesses. There are several prescriptions by Huxham extant which contain 400 substances each. What the effect of such an incongruous mixture can be is hard to imagine.

A happy medium, which, while not failing to take advantage of the great good which may be obtained from a judicious combination, does not

run into extremes, is what is to be aimed at. It is not the multiplicity of small shot, some of which may hit the mark it is true, which does the greatest execution, but the well directed rifle-ball. In proportion as a prescription is complicated so are its chances of failure multiplied. Each ingredient should be added with a clearly fixed and determinate idea of what its operation will be and what the indications are. Nothing should be put in without a clearly defined purpose in the mind of the prescriber.

In combining remedies having different powers care must be exercised that no two things are put together which exert directly opposite physiological or therepeutic action.

4. TO OBTAIN A NEW ACTIVE REMEDY NOT
AFFORDED BY ANY SINGLE
SUBSTANCE.

A. *By combining medicines which, when combined, produce an effect not produced by either alone.*—The well-known effect of Dover's Powder in producing a powerful diaphoretic action, an action not excited in any such degree

by either of its components alone, is a very good example of the object. The number of such combinations is, however, limited.

B. By combining substances which have the property of acting chemically upon each other; the result of which is the formation of new compounds.

—This can be illustrated by several examples drawn from the official preparations. The mixture Ferri Comp. or the Pil. Ferri Comp. in which the Sulphate of Iron is converted into a carbonate by the action of the Carbonate of Soda or Potash. Yellow and Black Wash are also examples under this head. The combination of Hydrochloric Acid and Ammonia gas, by which nascent chloride of ammonium is produced, is sometimes used as an inhalation.

5. TO AFFORD A CONVENIENT AND AGREEABLE FORM.

Various considerations should influence us in selecting the form for a remedy. The remedies which are suitable for the various forms of pills, mixtures, draughts, etc., have already been pointed out.

Care should be taken to have the form as

agreeable both to the sight and taste as its nature and the good of the patient will permit. At the same time the caprice of a patient should not influence us unduly in the choice of a remedy. That which, in the opinion of the writer, will do the most good should be written for and its form rendered as pleasing and attractive as circumstances will allow.

In the choice of a vehicle that one should be selected whose effect will be likely to correspond with the intention of the other ingredients.

The following sentence from Dr. Paris contains so much of sense and wisdom that I reproduce it here: "The perfection of a medicinal prescription may be defined by three words; it should be PRECISE (in its *directions*), CONCISE (in its *construction*), and DECISIVE (in its *operation*). It should carry upon its very face an air of energy and decision, and teach intelligibly the indication which it is to fulfil. It may be laid down as a proposition which is not in much danger of being controverted, that *where the intention of a medicinal compound is obscure its operation will be imbecile.*"

CHAPTER X.

INCOMPATIBILITY.

The subject of incompatibility is one which is so broad that only the man trained in chemistry and pharmacy for years can hope to master it in its fullest details, and the physician who can work in harmony with the pharmacist will achieve the best results. Yet a certain knowledge of the essentials of compounding should be mastered by every physician who hopes to prescribe and practice medicine.

To have a broad and clear basis upon which to build a knowledge of incompatibilities an understanding of qualitative chemical analysis is almost imperative.

Incompatibilities can be divided into three classes:

1. Therapeutical
2. Physical.
3. Chemical.

Therapeutical incompatibilities cannot be taken up in this book, as it is a subject which has to do solely with the action of drugs on the human organism and can be found in any of the standard text-books on therapeutics.

Physical incompatibilities are chiefly cases of insolubilities, as when a body which should be administered in solution is insoluble in the combined ingredients of the mixture, or when a body already dissolved is thrown out of solution by admixture with other bodies.

The most common classes are:

A. Immiscible liquids. As carbolic acid or chloroform with water, except in small amounts.

B. Oils, balsams, resins, and resinoids and their alcoholic solutions are precipitated by water or aqueous solutions.

C. Mixtures of tinctures, fluidextracts with aqueous solutions cause precipitation.

D. Mucilaginous and albuminous bodies also give a precipitate with strong alcoholic liquids.

E. Supersaturated solutions, or a solution in which only a part of the substance will dissolve.

Many of the physical incompatibilities can be avoided, in which respect they differ from the chemical, the general rules for which are:

1. *By order of mixing.* The order of mixing does much to determine the incompatibility and looks of the mixture, as by mixing one of two ingredients, which alone are incompatible, with some other part of the mixture the result will be made presentable or the precipitate will be thrown down in a fine condition and can easily be diffused by shaking.

2. *By changes in the bulk of the mixture, whereby the alcoholic or solution strength is kept within certain limits.* The percentage of alcohol in a mixture determines in many cases whether a salt will remain in solution or not; as for example strychnine in combination with bromides, iodides, and other metallic salts, requires a large amount of alcohol to hold it in solution. In these cases when alcoholic liquids are combined with water, reducing the quantity of water, instead of adding alcohol, and reducing the dose proportionately accomplishes the object. When a salt which is commonly soluble in

water is thrown out of solution by a concentrated solution of some other salt it is best to double the amount of water and the dose also.

3. *By alteration in the solvent used.* The principal solvents used in prescribing are water, alcohol, and glycerine, and combinations in different proportions.

Gums, albuminous bodies, and mucilages are dissolved by water, but should not be mixed, with alcohol unless diluted. Many salts are also dissolved, some of which are thrown out of solution by the addition of alcohol. Sugar and other neutral principles are also soluble and are not affected by alcohol unless in extreme amounts.

Alcohol is next to water our principal solvent; it dissolves most organic bodies, such as alkaloids, glucosides, neutral principles, organic acids, the volatile and one fixed oil, viz. Castor Oil, Camphor, resins and balsams, most of these being thrown out of solution by diluting with water. Many of the metallic salts are also soluble in alcohol.

Glycerine dissolves many of the substances

that are soluble in the other two solvents and is much used to dissolve such substances as Phenol, Iodine, Starch, Nitrate of Bismuth, and many of the metallic salts, and is also used in place of some of the water to aid in holding bodies in solution. For a more definite study of solubilities the reader must be referred to standard works on the subject.

4. *By emulsifying or suspending the substance with gums or syrups.* Acacia, Tragacanth, and simple syrup are some of the substances used to emulsify or suspend the substance in case of a supersaturated solution. Insoluble salts are sometimes held in this way.

Chemical incompatibilities are caused by chemical changes in the different constituents of the mixture, and are known by precipitation, or the formation of insoluble compounds, by effervescence or the formation of gases, and by changes in color. The largest class of incompatibilities are those due to the formation of an insoluble precipitate which may be of a poisonous nature. These insoluble salts are

never entirely inert, but act more slowly than the soluble.

The classes of cases where by improper association medicinal chemicals may become incompatible are as follows:

1. When free acids or acid salts are combined with hydrates, carbonates, or bicarbonates: as sodium bicarbonate and dilute hydrochloric acid.

2. When acids are combined with the salts of glucosides: as *Tr. digitalis* with dilute hydrocyanic acid.

3. Tannic and gallic acids and the substances containing them: as the astringent bitters, precipitate albumen, alkaloids, and most soluble metallic salts, as the salts of mercury, iron, lead, and copper.

4. Iodine and the soluble iodides are incompatible with the alkaloids and with substances containing them, also with most metallic salts: as potassium iodide and codeine.

5. Hydrates, carbonates, and bicarbonates precipitate the alkaloids: as the hydrochlorate of cocaine with lime water.

6. When chemicals are brought together which may give rise to vehement or explosive chemical action. These explosive mixtures are formed from the admixture of powerful oxidizers with substances that are easily oxidized.

A. Oxidizers: Chlorine and its oxides, free hydrochloric acid, nitro hydrochloric acid, chlorates, chromates, permanganates, nitric acid, nitrates, bromine, bromates, iodine, iodates, silver oxide, and peroxides.

B. Oxidizables: Phosphorus, hypophosphites, sulphur, sulphides, glycerine sugar, alcohols, oils, ether, tannin, cork, charcoal, creasote, dry organic substances, powdered iron, and zinc, arsenious acid, cyanides, oxalates, ferrous, mercurous and stannous salts.

7. When two or more soluble salts are associated which by the interchange of base or acid give rise to the formation of new compounds with different properties and therapeutical action, as zinc sulphate and lead acetate or magnesium sulphate combined with sodium carbonate.

By the use of the following simple rules by

Potter, the danger of incompatibilities may in a great measure be avoided.

Never use more than one remedy at a time if one will serve the purpose for which you are prescribing.

Select the simplest solvent, diluent, or excipient that you know of, remembering that the solvent power of water and alcohol for their respective substances decreases in proportion to the quantity of the other added.

Never use strong mineral acids either alone or in mixtures, unless in exceptional cases, but only the diluted official acids.

Aconite should be ordered in water alone, and the following substances are incompatible with so many others that it is best to prescribe them in simple syrup and alone: Alum, dilute hydrocyanic acid, dilute nitro hydrochloric acid, sulphuric acid, mercuric chloride (corrosive sublimate), iodine and the iodides, syrup of ferrous iodide, potassium permanganate, potassium acetate, potassium bromide, tartar emetic, tincture guaiac, morphine acetate, morphine hydrochlorate, quinine sulphate, liquor calcis,

liquor potassæ, liquor potasii arsenatis, liquor ferri nitratis, tincture ferri chloridi, zinc acetate, iron and quinine citrate, free chlorine in solution, tannic and gallic acids.

Silver nitrate, lead acetate and subacetate, although incompatible with almost everything else, may be combined with opium.

DICTIONARY OF INCOMPATIBLES.

- Acacia gum**, with alcohol, borax, ferric chloride, lead sub-acetate, and sulphuric acid.
- Acid, arsenious**, with lime-water, magnesia, iron oxide, and tannin.
- Acid, benzoic**, with ferric salts, lead acetate, and mercuric chloride.
- Acid, chromic**, with alcohol, arsenious acid, ether, glycerin, and organic solvents and substances. (Dangerously explosive.)
- Acid, citric**, with acetates, potassium tartrate, and sulphides.
- Acid, gallic**, with iron salts, spt. æther. nit., and metallic salts generally.
- Acid, hydrobromic**, same as hydrochloric; also acid. nitro-hydro-chlor. dil.
- Acid, hydrochloric**, with lead and silver salts and tartar emetic.
- Acid, hydrocyanic**, with copper, iron, and silver salts, mercuric oxide, morphine solutions, and sulphides.
- Acid, nitric**, with ferrous, salts lead acetate, and many organic substances (e. g., carbolic acid), which it may, in strong solution, oxidize.
- Acid, oxalic**, with calcium and iron salts and mineral acids.
- Acid, phosphoric**, with fer-

- ric chloride and lead acetate.
- Acid, picric,** with alkaloids and all oxidizable substances. Should on no account be compounded with phosphorus or sulphur, as it may be fatally explosive.
- Acid, salicylic,** with iron salts and spt. æther. nit.
- Acid, tannic,** with albumen, alkalies, alkaloids, chlorates, emulsions, ferrous and ferric salts, gelatin, metallic salts, mineral acids and tartar emetic.
- Acids generally,** with all alkalies and their carbonates, and with metallic oxides.
- Albumen,** with acids, alcohol, mercuric chloride and tannin.
- Alkalies,** with acids, alkaloidal salts, and most metallic acids.
- Alkaloidal salts generally,** with alkaline and earthy carbonates, borax, iodine and its compounds, double iodides of heavy metals (e. g., Donovan's solution), mercuric chloride, tannin, and all vegetable astringents.
- Alum,** with alkalies and alkaline carbonates.
- Ammonium acetate,** with acids, potash, and soda and their carbonates, lead and silver salts, and tr. ferri. perchlor.
- Ammonium benzoate,** with acids and ferric salts.
- Ammonium bromide,** with mineral acids, alkaline carbonates, chlorine, chlorate and bichromate of potash, nitrate of silver, calomel, and spt. æther. nit.
- Antimony and potassium tartrate,** with acacia gum, acids, alkalies, soap, calomel, tannin and all vegetable astringents.
- Antipyrin,** with acids, alkalies, cinchona preparations, copper sulphate,

sodium salicylate, spt. æther. nit., syr. ferri iodid., tannin, and all vegetable astringents.

Apomorphine hydrochloride, with alkalies, iodine, iron salts, potassium iodide, and tannin.

Arsenium bromide and chloride are immediately decomposed by water.

Arsenium iodide, with acids, mercuric chloride, and morphine salts.

Atropine and its salts, with alkalies, salts of mercury, and tannin.

Bismuth subnitrate, with alkaline bicarbonates, calomel, gallic acid, potassium or sodium iodide, sulphur, golden sulphide of antimony, and tannin.

Borax, with acacia mucilage, alkaloidal salts, glycerin, and mineral acids.

Bromides (water-soluble), with chlorine and lead and silver salts.

Caffeine and its salts, with all alkaloidal reagents except potassium iodohydrargyrate.

Calcium salts, with alkalies and their carbonates, oxalates, and sulphates.

Calomel, with alkalies, alkaline chlorides, bromides, hydrocyanic acid, iodides, organic acids, soap, and sodium carbonates.

Chloral hydrate, with alcohol, alkalies, calomel, carbolic acid, and potassium iodide.

Chlorates, with black antimony, ferrous iodide, hypophosphites, mineral acids, sulphur, and many organic compounds (dry and wet), tannin and tartaric acid.

Chlorine, with alkalies, bromides, iodides, lead and silver salts, tannin, vegetable mucilages, extracts, waters, infusions, tinctures, and syrups, milk, and emulsions.

and other oxidizable substances. Solutions should not come in contact with cork.

Quinine salts (dissolved), with alkalies, carbonates, tannin, and vegetable infusions.

Salicylates (alkaline), with acids, some alkaloids, ferric salts, and spt. æther. nit.

Salol, with alkalies.

Silver nitrate, with tap-water, hydrochloric, sulphuric, acetic, and tartaric acids and their salts, hydrocyanic acid and its compounds, iodine, iodides and bromides, alkaline and earthy carbonates, sulphur, arsenites, arsenical solutions, tannin and

astringent infusions, essential oils, extracts and resins.

Silver oxide, with acids, ammonia, bromides, chlorides, creosote, iodides, and tannin.

Sodium nitrate, with weak acids, oxidizing agents, and vegetable extracts.

Strontium salts, with phosphoric and sulphuric acids and their salts.

Strychnine solutions, with alkalies, astringents and liq. arsenicalis.

Valerianates, with acids.

Zinc chloride, with hard water.

Zinc valerianate, with acids, soluble carbonates, tannin, and metallic salts.

INDEX.

A

Abbreviations	53, 103
Abstracta	42
Aceta	30
Ad, use of	76
Apiol	148
Apothecaries' Weight	12, 14
Aquæ	23

B

Baths	91
Black Drop	146
Blue Mass	135
Borax	159
Bougia	42
Brimstone	161
British Pharmacopœia	14

C

Calomel	135
Carron Oil	117
Case of Noun, rules for	47

Cataplasms.....	92
Cerata.....	37, 92
Ceratum.....	107
" Resinæ.....	107
Chamomile.....	111
Chartæ.....	38
Children, doses for.....	101
Chrysophanic Acid.....	121
Citrine Ointment.....	136
Clyster.....	42
Cocainæ Hydrochloras.....	123
Codeine.....	147
Collodia.....	39
Combination of Medicines.....	201
Confectiones.....	35, 82
Corrosive Sublimate.....	135
Cream of Tartar.....	151

D

Decigram.....	169
Decocta.....	26
Dialyzed Iron.....	129
Discus.....	42
Domestic Measures.....	17
Donovan's Solution.....	112
Doses.....	99, 103
" for Children.....	101
Dover's Powder.....	81, 107, 114
Dragée.....	42
Draughts.....	78
Drinks.....	79
Drops.....	20
" in a fluid drachm.....	21

E

Electuaries.....	82
Elixir.....	27, 78
" Simple (Aromatic).....	113
Emplastra.....	38
Emulsa.....	25, 74
Emulsions.....	25, 74
Enema.....	42, 85
Epsom Salt.....	141
Extracta.....	32
" Fluida.....	33
" Specific Gravity of.....	173

F

Flowers of Sulphur.....	161
Fluid Extracts.....	33
" Measure.....	13
Fomentations.....	90
Formula.....	2
Fowler's Solution.....	112
Fractions, to write.....	16

G

Gallon.....	13
Gargles.....	84
Glauber's Salt.....	160
Glycerita.....	30
Goulard's Cerate.....	150
" Extract.....	150
Gram.....	169, 171
Granulum.....	42
Gray powder.....	135
Gun Cotton.....	133

H

Hive Syrup.....	157
Honeys.....	30
Huxam's Tincture.....	122
Hydriodic Acid, Syrup of.....	137

I

Incompatibility.....	210, 219
" Chemical.....	214
Infusa.....	25
Inhalations.....	84
Injections.....	85
Iron Alum.....	128

L

Labarraque's Solution.....	121
Lanolin.....	107
Lard.....	107
Latin, use of.....	44
Laudanum.....	146
Linimenta.....	39, 94
Liquores.....	24
Litharge.....	150
Lotions.....	90
Lugol's Solution	137

M

Male Fern.....	113
Massæ.....	39
Mel.....	30
Meter.....	167

Metric System.....	167
" " advantages of.....	195
" " aids to adoption of.....	190
" " units of.....	168
Milk of Sulphur.....	162
Misturæ.....	25, 72
Mixtures.....	25, 72
Monobromate of Camphor.....	118
Monrel's Solution.....	129
Mucilagines.....	25

N

Neutral Mixture.....	8, 140
Non-Official Preparations.....	41
Numeral Adjectives.....	15

O

Official Names.....	5
Oils.....	31
" Fixed.....	13
Ointments.....	36, 93
Olea.....	31
" Destillata.....	31
Oleata.....	39
Oleoresina.....	32

P

Paints.....	94
Papers, Medicated.....	38
Paregoric.....	146
Pearson's Solution (note).....	112
Pessaria.....	42
Pharmacopœia, U. S.....	23
" British.....	14

Phenacetin.....	103
Pilulæ.....	39, 62
Plasters.....	38, 92
Plummer's Pills.....	135
Poultices.....	92
Powders.....	40, 80
Preparations.....	22
" official.....	22
" non-official	41
Prescriptions, parts of.....	1
" grammatical construction of.....	44
" extemporaneous.....	62
" papers or blanks.....	97
Pronunciation.....	52, 60
Pulveres.....	40, 80

Q

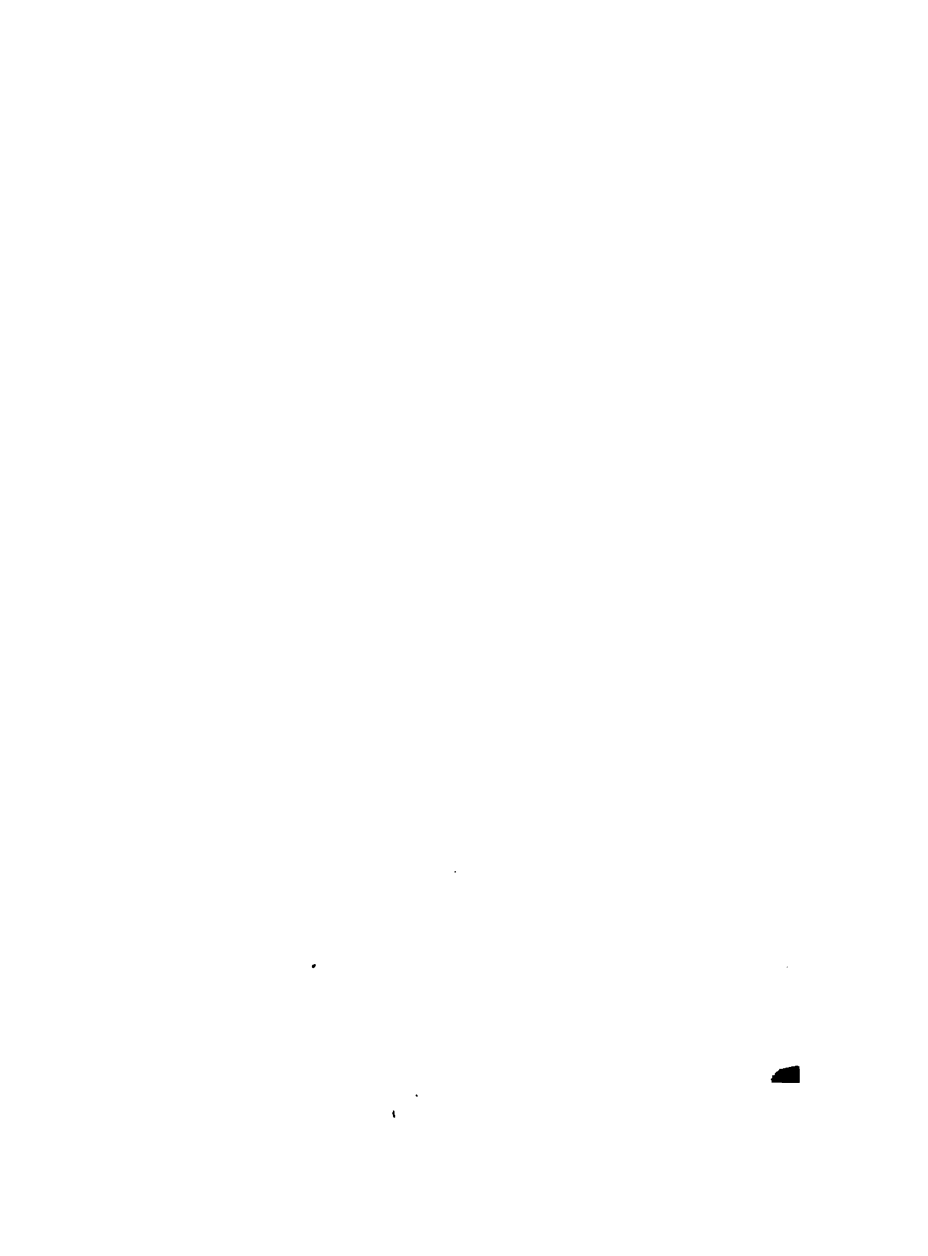
Quantity of a Prescription.....	96
Quevenne's Iron.....	128

R

Recipe.....	3
Resinæ.....	32
Rhatany.....	138
Rochelle Salt.....	151
Rule for use of Metric System in prescribing.....	192
Rules for the formation of cases.....	48, 50
" for changing from Apothecaries' Weight to the Metric System.....	183

S

Saccharine.....	103
Santonin.....	156





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